



EUROPEAN CENTRAL BANK

EUROSYSTEM

# FINANCIAL INTEGRATION IN EUROPE

APRIL 2013





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## FINANCIAL INTEGRATION IN EUROPE

APRIL 2013

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## ABBREVIATIONS

### COUNTRIES

AT	Austria	IT	Italy
BE	Belgium	JP	Japan
BG	Bulgaria	LT	Lithuania
CH	Switzerland	LU	Luxembourg
CY	Cyprus	LV	Latvia
CZ	Czech Republic	MT	Malta
DK	Denmark	NL	Netherlands
DE	Germany	PL	Poland
EE	Estonia	PT	Portugal
IE	Ireland	RO	Romania
ES	Spain	SE	Sweden
FI	Finland	SI	Slovenia
FR	France	SK	Slovakia
GR	Greece	UK	United Kingdom
HR	Croatia	US	United States
HU	Hungary		

### OTHERS

ABS	Asset-backed security
ACI	Financial Markets Association
AFME	Association for Financial Markets in Europe
AMEX	American Stock Exchange
BCBS	Basel Committee on Banking Supervision
BIC	Bank identifier code
BIS	Bank for International Settlements
BRRD	Bank Recovery & Resolution Directive
CBPP	Covered Bond Purchase Programme
CCBM	Correspondent central banking model
CCBM2	Collateral Central Bank Management
CCP	Central counterparty
CDO	Collateralised debt obligation
CDS	Credit default swap
CEPR	Centre for Economic Policy Research
CESAME	Clearing and Settlement Advisory and Monitoring Expert Group
CESR	Committee of European Securities Regulators
CFS	Center for Financial Studies
CGFS	Committee on the Global Financial System
CLS	Continuous Linked Settlement
CPSS	Committee on Payment and Settlement Systems
CRDIV	Capital Requirements Directive
CRR	Capital Requirements Regulation
CSD	Central securities depository
CSM	Clearing and settlement mechanism
DTCC	The Depository Trust & Clearing Corporation
DVP	Delivery versus payment
EAA	Euro area accounts

### ABBREVIATIONS

EBA	European Banking Authority
EBF	European Banking Federation
EBRD	European Bank for Reconstruction and Development
ECB	European Central Bank
Ecofin Council	Council of Economic and Finance Ministers
ECP	Euro commercial paper
ECSDA	European Central Securities Depositories Association
EEA	European Economic Area
EFMLG	European Financial Markets Lawyers Group
EFR	European Financial Services Round Table
EFSF	European Financial Stability Facility
EGMI	Expert Group on Market Infrastructures
EIOPA	European Insurance and Occupational Pensions Authority
EMIR	European Market Infrastructure Regulation
EMU	Economic and Monetary Union
EONIA	Euro overnight index average
EPC	European Payments Council
EPTG	European Post Trade Group
ERF	European Resolution Fund
ESA	European Supervisory Authorities
ESCB	European System of Central Banks
ESM	European Stability Mechanism
ESMA	European Securities and Markets Authority
ESRB	European Systemic Risk Board
EU	European Union
EUREPO	Repo market reference rate for the euro
EURIBOR	Euro interbank offered rate
FDIC	Federal Deposit Insurance Corporation
FISCO	Clearing and Settlement Fiscal Compliance expert group
FOMC	Federal Open Market Committee
FRFA	Fixed-rate full allotment
FSB	Financial Stability Board
FSOC	Financial Stability Oversight Council
GDP	Gross domestic product
IBAN	International bank account number
ICMA	International Capital Market Association
ICPF	Insurance corporations and pension funds
ICSD	International central securities depository
IMF	International Monetary Fund
IOSCO	International Organization of Securities Commissions
ISDA	International Swaps and Derivatives Association, Inc.
ISLA	International Securities Lending Association
LTRO	Longer-term refinancing operation
LVPS	Large-value payment system
M&A	Merger and acquisition
MBS	Mortgage-backed security
MFI	Monetary financial institution
MiFID	Markets in Financial Instruments Directive

MMF	Money market fund
MRO	Main refinancing operations
NASDAQ	National Association of Securities Dealers Automated Quotations
NCB	National central bank
NFC	Non-financial corporations
NTMA	National Treasury Management Agency
NYSE	New York Stock Exchange
OECD	Organisation for Economic Co-operation and Development
OIS	Overnight index swap
OJ	Official Journal of the European Union
OMT	Outright Monetary Transactions
OTC	Over the counter
PHA	Proprietary home account
Repo	Repurchase Agreement
RMBS	Residential mortgage-backed security
RTGS	Real-time gross settlement
SCT	SEPA credit transfer
SDD	SEPA direct debit
SEPA	Single Euro Payments Area
SIFMA	Securities Industry and Financial Markets Association
SMP	Securities Markets Programme
SRA	Single Resolution Authority
SRM	Single Resolution Mechanism
SSM	Single Supervisory Mechanism
SSP	Single shared platform
SSS	Securities settlement system
STEP	Short-term European paper
TARGET	Trans-European Automated Real-time Gross settlement Express Transfer system
TR	Trade repositories
T2S	TARGET2-Securities
UNIDROIT	International Institute for the Unification of Private Law
URD	User requirements document
WFE	World Federation of Exchanges



## PREFACE

The ECB's annual report on financial integration in Europe contributes to the advancement of the European financial integration process by analysing its development and the related policies.

The Eurosystem has a keen interest in the integration and efficient functioning of the financial system in Europe, especially in the euro area, as reflected in the Eurosystem's mission statement. Financial integration fosters a smooth and balanced transmission of monetary policy throughout the euro area. In addition, it is relevant for financial stability and is among the reasons behind the Eurosystem's task of promoting well-functioning payment systems. Without prejudice to price stability, the Eurosystem also supports the objective of completing the EU Single Market, of which financial integration is a key aspect.

In September 2005 the ECB published a first set of indicators of financial integration and an accompanying report assessing the state of euro area financial integration. Since then the work on financial integration has evolved and has resulted in the publication of a yearly report.

## KEY MESSAGES

## KEY MESSAGES

### OVERALL ASSESSMENT OF FINANCIAL INTEGRATION

- The fragmentation of euro area financial markets increased further in the first half of 2012. The key driver was redenomination risk, linked to fears of a possible break-up of the euro area.
- Around mid-2012, the decisions by European leaders to set up a banking union and the announcement, as well as adoption, of non-standard measures by the ECB contributed to restoring confidence in euro area financial markets, improving market sentiment and reversing the earlier trend towards market fragmentation.
- In spite of the marked improvements in market conditions since then, the climate in the financial markets remains fragile. It is of paramount importance that the momentum towards building a stronger Economic and Monetary Union is maintained. Further progress towards the establishment of a single supervisory mechanism, as well as other components of the banking union, will be a critical factor underpinning financial market performance this year.

### MONEY MARKETS

- Euro area money market conditions improved in 2012. The improvement was due to the non-standard monetary policy measures, such as the two three-year longer-term refinancing operations (LTROs) and the announcement on Outright Monetary Transactions (OMTs), as well as encouraging signs regarding the implementation of macroeconomic, fiscal and financial adjustment measures in some Member States. Going forward, lasting improvements in money markets will largely depend on the progress of the various initiatives to strengthen the financial sector which are outside of the scope of monetary policy.
- Price-based indicators, especially overnight rates, indicate a high level of dispersion between euro area countries, while quantity-based indicators show a “home bias” regarding interbank counterparties, the latter being particularly pronounced in countries that have endured high levels of financial stress recently. In those countries, some financial institutions are still suffering from limited market access.

### BOND MARKETS

- During the first half of 2012, sovereign bond yields of countries under financial stress rose. At the same time, the search for safe and liquid assets caused a decrease in yields in other Member States, deepening the divide in market conditions across euro area countries.
- After the announcement on OMTs and announcements by European leaders regarding the banking union, sovereign bond markets rebounded. Sovereign spreads declined, especially in the countries where they had increased the most in the preceding months.

- Corporate bond markets also stabilised during the second half of 2012. Moreover, the market for banks' long-term debt financing was characterised by increasing divergence in issuance patterns between distressed and non-distressed countries, which can be interpreted as a signal of reduced integration.

#### EQUITY MARKETS

- Since the onset of the crisis, equity market performance has revealed a lower degree of cross-country heterogeneity than that of bond markets. However, some stock market divergence was nonetheless observed. Our newly created "segmentation index" showed that this occurred most in countries subject to more financial stress, while segmentation in other countries remains around its long-term average.

#### BANKING MARKETS

- The recovery of banking markets is proving to be slower and less vigorous than that of other market segments. A divergence between country groups along the lines already noted can also be observed in banking markets, for instance in the rate of expansion of loans to non-financial corporations. The cross-country standard deviation of bank interest rates on new loans to non-financial corporations remains high.
- The regulatory deadline of 1 February 2014 set for completing migration to SEPA constitutes a major push towards the realisation of a more integrated retail payments market in Europe. The full achievement of SEPA represents the main challenge at present, particularly in view of the different speeds of migration in Member States.

## EXECUTIVE SUMMARY

The development of financial market integration in 2012 can be divided into two parts: after further market deterioration in the first half of the year, an improvement was observed in the second half.

Throughout the first half of 2012, despite the positive effects on bank funding of the two three-year refinancing operations (LTROs) carried out by the ECB at the turn of the year, increasing market fragmentation was caused by adverse market sentiment, deteriorated fiscal conditions and a fragile banking sector in some euro area countries. These developments were amplified by speculation about the risk of a break-up of the euro area which gave rise to redenomination risk premia.

All market segments reflected these adverse conditions. In particular, the sovereign debt markets displayed an increased divergence in government bond yields, in part related to a flight into safe-haven assets.

The change in sentiment during the second half of 2012 was caused by actions which demonstrated the strength of cohesion within Europe. In particular, the decision in June 2012 by European leaders to create a single supervisory mechanism as a first step towards a banking union, and the announcement on Outright Monetary Transactions (OMTs) created more benign market conditions, as shown by the indicators in this report.

The indicators presented in this report suggest that at the end of 2012 the integration of the euro money market improved. However, although price-based indicators indicate decreasing dispersion, other indicators still show a “home bias” with respect to interbank counterparties and a continuing dependency of some banks on the Eurosystem’s liquidity support.

In the first half of 2012, the euro area sovereign bond markets continued to experience severe tensions and a significant degree of segmentation. However, during the second half of the year, sovereign bond yields declined significantly and some normalisation of liquidity conditions could be observed. As regards equity markets, these demonstrated a higher resilience than bond markets during the crisis, although driven by country-specific risk.

Finally, for euro area banking markets, some indicators signal a lower degree of integration, but this has stabilised in recent months.

Overall, the strong signs of fragmentation have been gradually reversed as a result of concrete policy measures, but the dispersion among countries remains high. Further policy efforts are therefore necessary to restore confidence in the euro area and its financial markets.

**Chapter II** describes the main features of the proposed single supervisory mechanism (SSM) as the first component of the banking union. It also looks at the main benefits of the SSM for financial stability and financial integration, as well as the remaining challenges to completing the banking union and the steps required to operationalise the framework within which the ECB shall carry out the tasks conferred upon it.

**Chapter III** provides an overview of the main activities that the Eurosystem pursued in 2012 with a view to advancing financial integration in the euro area.

As regards the provision of advice on the legislative and regulatory framework for the financial system, the ECB and the Eurosystem have actively contributed to strengthening the regulation of



the banking and investment firms sector. The ECB provided several opinions on important topics in the area of EU supervisory and regulatory arrangements. This comprised opinions on the proposals for the SSM, the Capital Requirements Directive (CRD IV), the Capital Requirements Regulation (CRR), and the Directive establishing a framework for the recovery and resolution of credit institutions and investment firms (BRRD).

In the area of the legal framework for securities services, various important steps, supported by the ECB, have been undertaken. The ECB has issued opinions on the following: the proposal for a Regulation on improving securities settlement in the European Union and on central securities depositories; the “Alternative Investment Funds Managers Directive (AIFMD)”; the “UCITS V Directive”; the “Regulation on key information documents for investment products” and on the European Market Infrastructure Regulation “(EMIR)”. The ECB has also been actively involved in the development of a legal entity identifier.

With respect to the role that the ECB and the Eurosystem play as a catalyst, in November 2012 the Governing Council announced that loan-level data reporting will be mandatory for residential mortgage-backed securities and for asset-backed securities (ABSs) whose underlying assets include loans to small and medium-sized enterprises as of 3 January 2013, for commercial mortgage-backed securities as of 1 March 2013, and for consumer finance, leasing ABSs and auto loan ABSs as of 1 January 2014. As regards the Prime Collateralised Securities (PCS) initiative, its non-mandatory EU-wide standards for ABSs relating to quality, transparency, standardisation and simplicity are expected to lead to increased liquidity for securities which acquire the PCS label. In November 2012, the first asset was granted the PCS label. Furthermore, the first covered bond that complied with the Covered Bond label was introduced in January 2013. In addition, the ECB’s support for projects such as STEP and SEPA continued during 2012.

In the field of enhancing knowledge, raising awareness and monitoring the state of financial integration, the ECB carried out a thorough review of the set of financial integration and development indicators. The review was aimed at assessing whether the indicators used still accurately reflect the market situation and to make the indicators more granular by further breaking down the information through country groupings. In April 2012, the ECB and the European Commission jointly organised an international conference on “Financial integration and stability: towards a more resilient single EU financial market” with the participation of the President and Vice-President of the ECB and other top-level market participants, financial regulators and academics. At this conference the ECB’s Report on Financial Integration in Europe and the European Financial Stability and Integration Report prepared by the European Commission were presented. The conference was the third of a series to be held annually on the same topic, hosted alternately by the ECB and the Commission.

Finally, regarding central bank services that foster financial integration, TARGET2, the single technical platform for large-value payments in euro, is one good example as it has eliminated the fragmented situation that previously existed in the management of central bank liquidity and the real-time settlement of euro payments. In 2012 the Eurosystem took the decision to migrate to a new messaging standard in 2017. This will further foster financial integration and will improve interoperability with other market infrastructures, such as TARGET2-Securities (T2S). Furthermore, in mid-2012, 23 European CSDs committed themselves to T2S. The large CSD participation in T2S will lead to significant economies of scale and lower settlement costs and will ensure wide reach of the T2S harmonisation achievements.

**Special Feature A**, entitled “*Euro area money market segmentation in a low interest rate environment*”, focuses mainly on the developments of money market segmentation before and after the July 2012 ECB rate cut. It argues that a low interest rate environment can have an impact on the degree of financial market integration. Its main finding is that the search for yield triggered by the low interest rate environment appears to have mainly benefited counterparties and financial instruments with relatively high ratings and located in jurisdictions relatively immune from market tensions, but which did not have safe-haven status.

**Special Feature B**, entitled “*The integration of the euro retail payments market – SEPA and beyond*”, describes why the Single Euro Payments Area (SEPA) is a major driver of financial integration in Europe and how it has evolved over time. Furthermore, the feature gives an overview of the major benefits from the creation of SEPA, such as improvements in terms of both the efficiency and the security of cashless retail payments. From a macroeconomic perspective, the realisation of a more efficient retail payments market through SEPA can facilitate trade, increase competition and innovation, foster financial integration, and add to the completion of the single currency. The remaining challenge for SEPA, apart from SEPA for cards, is the replacement of domestic credit transfers and direct debits in the euro area by truly pan-European ones by 1 February 2014. The Special Feature concludes by looking ahead to the next generation of retail payments in the domain of internet and mobile payments.

**Special Feature C**, entitled “*Sectoral accounts and rebalancing in the euro area*”, analyses cross-country patterns in sectoral financial balances from a financial integration perspective. This feature builds on the special feature in the ECB’s 2012 Financial Integration Report, examining how aggregate and sectoral savings-investment imbalances have developed across countries in the euro area in more detail and focusing on recent quarters. The analysis suggests that, while euro area financial integration permitted a build-up of external deficits and surpluses across euro area countries, these differentials in the external balances reflected not only growth differentials, but also growing competitiveness imbalances, as measured by unit labour costs, posing a challenge when cross-border funding dried up. These imbalances were partially reversed in 2012, particularly in countries under an EU/IMF-programme.

**Special Feature D**, entitled “*US money markets: structural comparison and implications for financial integration*”, discusses financial integration within US money markets with a view to presenting key structural differences from the euro area and implications for money markets and policy. Although US money market integration would be expected to be much greater than that of the euro area, there are certain aspects of the US money market that point to some areas where markets may not be fully integrated (e.g. differences in access to central bank liquidity between banks and non-bank entities).



# CHAPTER I

## RECENT DEVELOPMENTS IN FINANCIAL INTEGRATION IN THE EURO AREA

*This chapter reviews recent developments in financial integration in the main segments of the euro area financial sector: i.e. the money, bond and equity markets and the banking sector.*

*During the first half of 2012, and particularly during the second quarter, the euro area financial system was strongly affected by a sharp increase in risk aversion paired with an intensification of investors' concerns regarding the sustainability of sovereign fiscal positions. The intensification of redenomination risk increased the divergence in government bond yields further, and reinforced flight-to-safety flows into safe haven assets. In the equity markets, valuation levels between countries began to drift apart significantly, a development that was driven mainly by countries under stress. Similarly, the banking markets also showed signs of further fragmentation.*

*In the second half of 2012, the decision by European leaders to move towards a “banking union” and the announcement by the Governing Council of the ECB concerning Outright Monetary Transactions (OMTs) gave rise to more benign market conditions. As a result of the ECB's efforts to repair the transmission of its monetary policy, although still characterised by a high degree of fragmentation, conditions in euro area money market improved. These measures also led to a significant decline in sovereign bond yields and to some normalisation of liquidity conditions.*

### I INTRODUCTION

This chapter reviews the most significant developments regarding financial integration in the euro area during 2012. It focuses on the most important segments of the financial markets, namely the money, bond, equity and banking markets. This year, the main focus is placed on the intensification of the financial crisis and its impact on financial integration in the main market segments.

During the first half of 2012, the financial crisis intensified due to adverse market sentiment, deteriorated fiscal conditions and a fragile banking sector in some euro area countries. This led to increased fragmentation of European financial markets and had a negative impact on the real economy. These developments were amplified by speculation about the risk of a break-up of the euro area, which gave rise to redenomination risk premia. A strong sign of cohesion came from the decision by European leaders in June to accelerate the move towards a “banking union” by creating a single bank supervisor within the ECB and opening up the possibility that European banks, under certain conditions, could receive capital directly from the European Stability Mechanism (ESM). Together with the ECB's new programme of government bond market intervention (OMTs), this announcement led to more benign market conditions.

Over the course of the year, the money market experienced signs of improvement. The conduct of two three-year longer-term refinancing operations (LTROs) at the end of 2011 and in early 2012 helped to improve sentiment in the first half of the year. However, the functioning of the euro money market remained somewhat impaired. In particular institutions from countries under stress had limited market access. In order to alleviate these concerns, the ECB's Governing Council took further measures during the second half of 2012. The ECB lowered the main refinancing operation rate, deposit facility rate and marginal lending facility rate by 25 basis points each to 0.75%, 0.00% and 1.50% respectively and made its announcement on OMTs. As a result of these efforts, the market sentiment improved and the tail risk related to sovereign debt crisis progressively declined. Also at the beginning of 2013, the repayment of the two three-year LTROs was larger than expected and was seen as a positive sign of gradual normalisation in euro money market conditions.

In the first half of 2012, developments in bond markets (sovereign and corporate) were still sharply differentiated among euro area countries. The surge of risk aversion exacerbated heterogeneity in asset prices along with a hunt for a limited amount of safe and liquid assets. There is some evidence that concerns about country-specific risks pushed up the cost of funding in the countries under financial stress, while pushing it down in others. This heterogeneity in financial developments partly reflects the impact of the financial crisis on the real economy, especially in distressed countries. Furthermore, bond markets were affected by the emergence of a perceived risk of a break-up of the euro area which amplified around mid-2012, leading investors to demand an additional redenomination premium for holding the assets of specific countries. This created a risk of increased instability, and further impaired the transmission of the Eurosystem's single monetary policy. The announcement on OMTs, the compromise reached by Europe's political leaders on movement towards a banking union, and additional measures on the fiscal side, helped to address the severe distortions in euro area government bond markets. In particular, the second half of 2012 was characterised by a gradual normalisation of euro area sovereign bond markets with a significant decline in yields, improving liquidity conditions and a return of foreign investors in countries under stress together with some reversal of previous flight-to-safety flows in non-distressed countries.

Although equity markets proved more resilient than bond markets during the crisis, an increased degree of market fragmentation can be detected from the divergence in valuation levels across countries. These developments may have been accentuated by a possible resurgence of home bias and less synchronous business cycles. As a result, country-specific risk also became a more important factor in this market and cross-border holdings increased.

Data on secondary market functioning and on cross-border holdings of assets, as shown later in this chapter, provide further evidence that some markets were significantly fragmented in 2012.

Finally, euro area banking markets indicators generally point to a lower degree of integration during 2012. Indicators on the cross-border activities of banks, as well as on prices and conditions for loans and deposits, reveal a lower degree of integration than in previous years.

During 2012, concrete policy steps were taken to reinforce financial stability and integration. In this context, it is essential to maintain momentum in the implementation of these reforms. Several of these policy measures are described in this report.

In the following sections, developments specific to each segment of the financial system are analysed in detail using several indicators of financial integration.<sup>1</sup>

## 2 MONEY MARKETS

Since the collapse of Lehman Brothers in the second half of 2008, integration in euro area money market has declined significantly, as witnessed by an upward drift in cross-country dispersion for overnight rates and a significant decline in interbank market activity, particularly in the unsecured segment.<sup>2</sup>

1 Some of the indicators presented in Chapter 1 show data for two groups: "distressed" countries and "non-distressed" countries. This country grouping is based on long-term interest rates on sovereign bonds with a remaining maturity of approximately ten years. The distressed group comprises Cyprus, Spain, Greece, Ireland, Italy, Portugal and Slovenia. The non-distressed group comprises Austria, Belgium, Germany, Estonia, Finland, France, Luxembourg, Malta, the Netherlands and Slovakia. Some indicators do not incorporate all countries owing to limited data availability.

2 Developments in the 2008-2011 period, and the policy actions undertaken by the Eurosystem to contain money market fragmentation, are described in detail in previous issues of this report.



In 2011 the intensification of the euro area sovereign bond market crisis impacted further on market integration. The effects on the secured money market segment became more visible, as significant price differentiation in the repo market emerged, with the pricing of risk becoming much more dependent on the geographical origin of both the counterparty and the collateral. As several financial institutions started to face liquidity constraints, the ECB's Governing Council announced further non-standard monetary policy measures in order to repair the transmission mechanism and provide liquidity support, particularly with the two three-year LTROs conducted in December 2011 and February 2012. This drove excess liquidity in the banking system to very high levels, with the ECB increasing its intermediation role in the financial system.

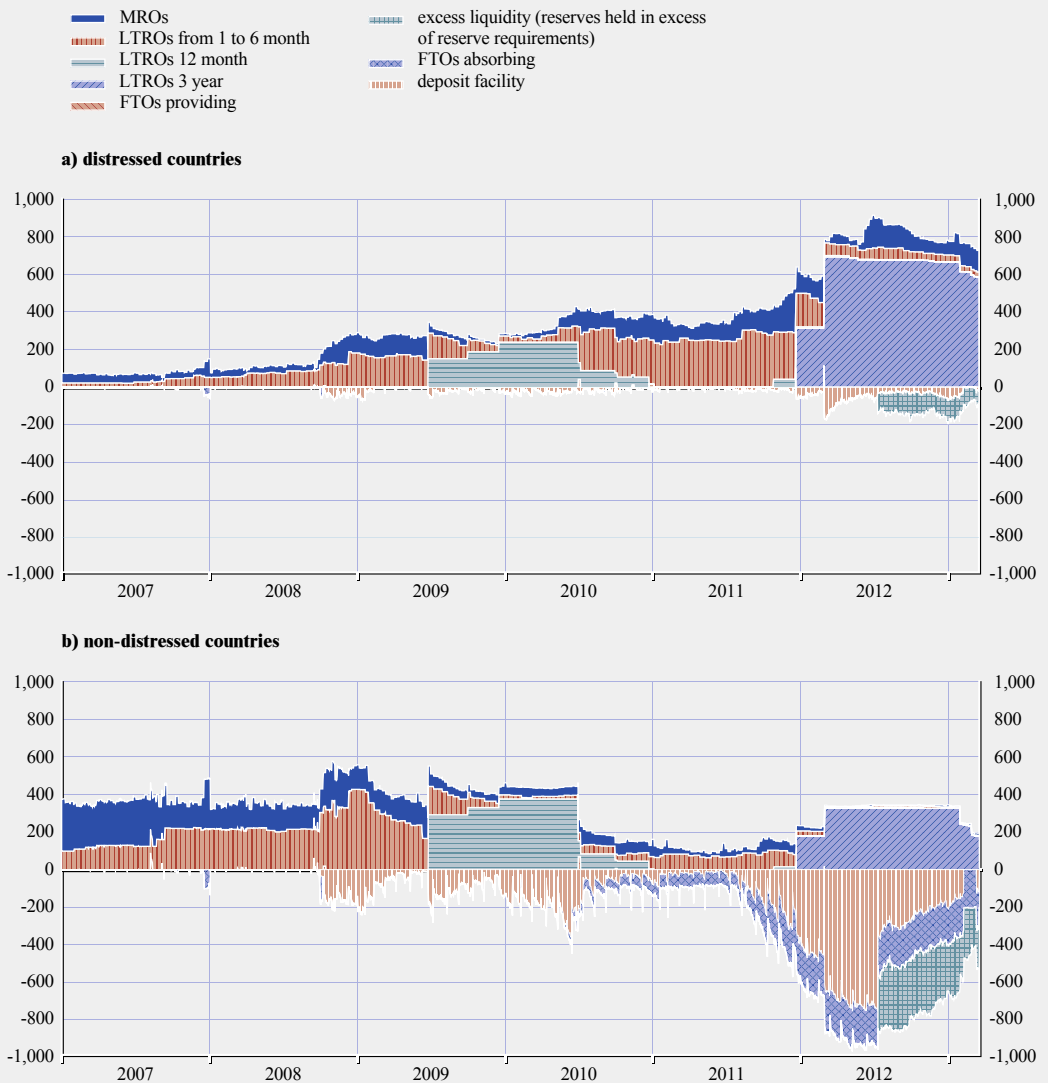
The abundant liquidity buffers held by the banking sector as a result of the Eurosystem's measures removed a large part of the short to medium-term funding risks of banks, and money market rates proved more resilient when sovereign debt tensions began to escalate again in May 2012. However, excess liquidity continued to be distributed unevenly among euro area countries, and this became even more pronounced following the two three-year LTROs. The aggregate recourse to the Eurosystem refinancing operations significantly increased for counterparties/banks from the distressed country group, in some cases for precautionary reasons, but also due to limited access to global funding markets. On the other hand, counterparties/banks from the non-distressed country group experienced high liquidity inflows, as reflected in increasing recourse to the deposit facility. However at the beginning of 2013, the recourse to ECB's market operations for both country groups declined progressively after the repayment of the first three-year LTRO on 30 January, whose amount was larger than expected, along with a large number of repaying banks (Chart 1).

Despite signs of improvement after the two three-year LTROs, the functioning of the euro money market remained somewhat impaired, as counterparty credit risk concerns with respect to banks from euro area countries under stress remained elevated and the environment of excess liquidity continued to depress market activity. Funding costs continued to diverge according to the geographic origin of both the counterparty and the collateral, while market access of counterparties in distressed jurisdictions remained seriously impaired, thereby hampering the uniform transmission of monetary policy throughout the euro area. In order to alleviate such concerns, the ECB's Governing Council took further measures to improve the transmission of monetary policy and pursue the main objective of price stability in the euro area. On 5 July 2012, the ECB's Governing Council lowered the ECB main refinancing rate by 25 basis points from 1.00% to 0.75%. The deposit facility rate and the marginal lending facility rate were also cut by 25 basis points, to 0.00% and 1.50% respectively. Given the large allotments at the two three-year LTROs and the resulting large amount of excess liquidity, the rate of the deposit facility continued to act as the main reference for short-term money market rates, leaving those rates close to zero in the second half of the year. On 6 September 2012, the ECB's Governing Council announced the preparation of OMTs. It decided to suspend the application of the minimum credit rating threshold requirement for assets issued or guaranteed by the governments of countries that are eligible for OMTs and to make marketable debt instruments denominated in US dollars, pounds sterling or Japanese yen, issued and held in the euro area, eligible for its refinancing operations.

As a result of the combined effects of such measures, conditions in euro money markets improved since the second half of 2012. In the unsecured money market, the EURIBOR-OIS spread, which is often used as an indicator of credit and liquidity risk in the euro money market, tightened over 2012, reaching the lowest level since September 2007. In the secured segment, the two three-year LTROs contributed to a decline in spreads between the secured rates of countries not subject to

Chart I Recourse to the ECB's market operations and standing facilities

(EUR billions)



Source: ECB.

market tensions and those of, for example, Italy and Spain. However, market activity remained subdued in both secured and unsecured markets, owing in part to the excess liquidity environment and the flatter yield curve (which reduced trading opportunities).

Even though the fragmentation of the euro money market somewhat abated in the course of 2012, it still remains high, as evidenced by, for example: (i) a large, albeit decreasing, dispersion of EONIA, EURIBOR and EUREPO contributions; (ii) the “home bias” with respect to interbank counterparties; and (iii) a continuing dependency of some banks on the Eurosystem’s liquidity-providing operations as a consequence of their impaired market access.

## PRICE-BASED INDICATORS

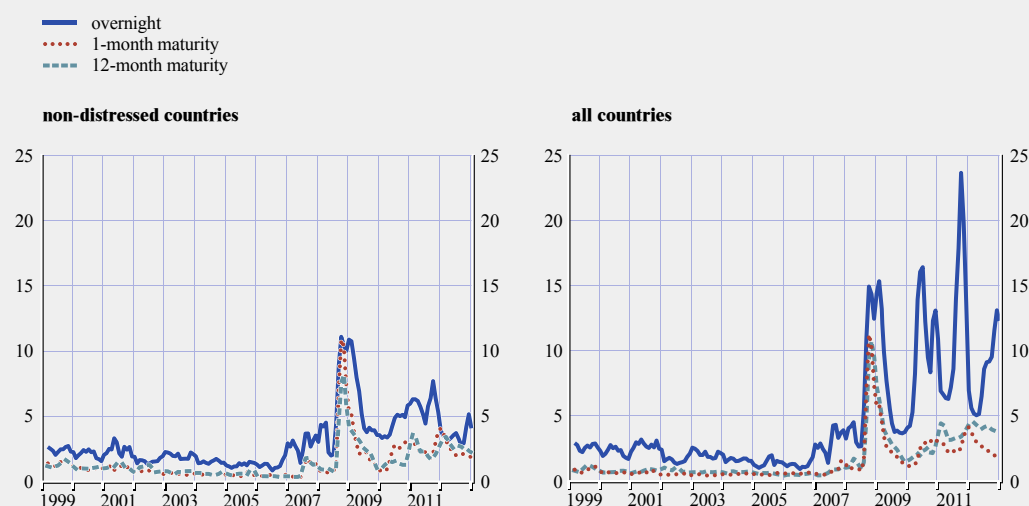
The cross-country standard deviation of EONIA lending rates has shown an upward trend with large fluctuations since 2007 (Chart 2).

Despite different patterns across euro area countries, the overall dispersion of overnight rates has declined significantly since December 2011 as a result of the ample liquidity arising from the two three-year LTROs and the discontinuation of the fine-tuning operations carried out on the last day of the maintenance period, which had typically led to a spike in the EONIA. In the non-distressed country group, the dispersion of overnight rates reached a peak immediately after the collapse of Lehman Brothers, when there was a sharp decline in liquidity across several money market segments. Since then, overnight rates dispersion has declined, and in 2012 it reached its lowest level since 2008 at 3 basis points. In the full sample of countries (distressed and non-distressed country groups), the dispersion of overnight rates experienced large fluctuations mirroring closely the periods of stress in sovereign euro area bond markets. In the first half of 2012, the dispersion of overnight rates in the distressed countries declined significantly to around 5 basis points as result of the two three-year LTROs, but increased to above 10 basis points in the second half of the year as some concerns about the euro sovereign debt crisis re-emerged, affecting mostly counterparties from those countries. On one hand, lower money market interest rates, combined with the large excess liquidity and a flatter yield curve, reduced incentives for interbank trading among the liquidity rich banks. On the other hand, counterparty credit concerns and a lack of credit lines continued to hamper the flow of liquidity to the lower rated banks with liquidity needs. When compared with the overnight unsecured market in the United States (FED funds), similar dynamics can be found (see Special Feature D on US money markets).

The cross-country standard deviation of the EURIBOR declined in 2012, after it had risen for all maturities since 2007, although not to the same extent as for the overnight rates. This difference is largely explained by the fact that the EONIA, which is used for overnight maturities, is a

**Chart 2 Cross-country standard deviation of average unsecured interbank lending rates across euro area countries (EONIA, EURIBOR)**

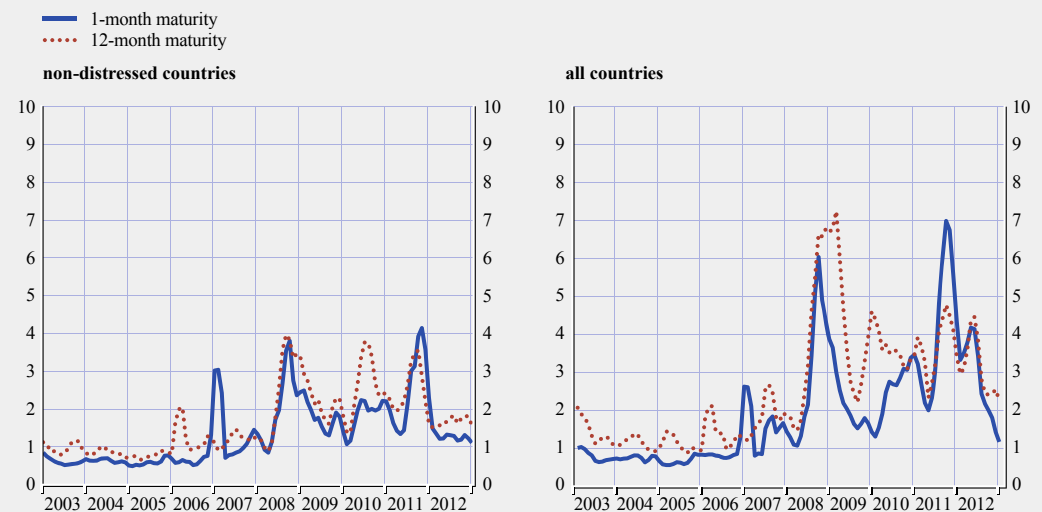
(61-day moving average: basis points)



Sources: EBF and ECB calculations.

**Chart 3 Cross-country standard deviation of average interbank repo rates across euro area countries (EUREPO)**

(61-day moving average: basis points)



Sources: EBF and ECB calculations.

volume-weighted rate over a full day, while the EURIBOR is a reference rate based on an expert assessment at a given point in time during a day, which should in principle reflect lending rates from one generic prime bank to another generic prime bank and not the funding/lending rate of one particular bank to its counterparties. In 2012, the dispersion of interbank rates for one-month and 12-month maturities declined remaining below 5 basis points, with similar patterns across euro area countries, albeit with a marginally higher dispersion in interbank rates for counterparties/banks from the distressed country group. The low dispersion observed could be attributed to the market sentiment improvement after ECB's Governing Council decisions. However, as noted in the 2012 Euro Money Market Survey<sup>3</sup> activity in the unsecured segment remained highly concentrated in overnight transactions (66% of total borrowing activity and 83% of lending transactions), while turnover in maturities beyond one month remained very limited (only around 2% of total unsecured activity). It is also worth mentioning that while the dispersion in overnight rates is almost back to historical levels for the non-distressed countries, the same is not observed for the longer maturities, where risk premia are still high compared to pre-crisis levels.

The cross-country standard deviation of secured interbank lending rates, based on the EUREPO, has declined since the summer of 2011 for both 1-month and 12-month maturity instruments (Chart 3). In the non-distressed country group, the repo rate dispersion started to decline in the second half of 2011 and remained stable in 2012 at below 2 basis points for both maturities. Indeed, rising concerns about the euro area debt crisis increased demand for collateral with higher credit ratings, typically observed in non-distressed countries. Meanwhile, divergence between repo rates

3 The ECB's Euro Money Market Survey has been conducted on an annual basis since 1999 and always compares data for the second quarter of the current year with data for the second quarter of the previous year. It is conducted by experts from the European System of Central Banks, i.e. the ECB and the national central banks of the European Union. The survey uses a permanent panel of 105 banks wherever longer-term comparisons are made, but also includes data provided by the full panel of banks, which has grown over time, in order to obtain a more complete picture of the market. The full panel currently comprises 172 banks.

on general collateral from distressed countries and non-distressed countries declined significantly in 2012, in response to investors' search for positive returns and the progressive reduction of tail risk related to sovereign debt crisis induced by OMTs announcement.

### QUANTITY-BASED INDICATORS

Breaking down the available information on transactions in various money market segments according to the geographical location of the counterparty reveals a stable composition over the decade for both country groups (Chart 4). The ECB's Euro Money Market Survey (conducted in Q2 2012) shows that over the years the distressed country group has a larger share of domestic transactions (secured and unsecured), increasing somewhat in the first half of 2012, due to increasing concerns about the sovereign debt crisis during that period which affected mostly counterparties from countries under stress. As regard counterparties from non-distressed country group, they continued to conduct cross-border transactions mostly within the euro area over the years, declining marginally in the first half of 2012.

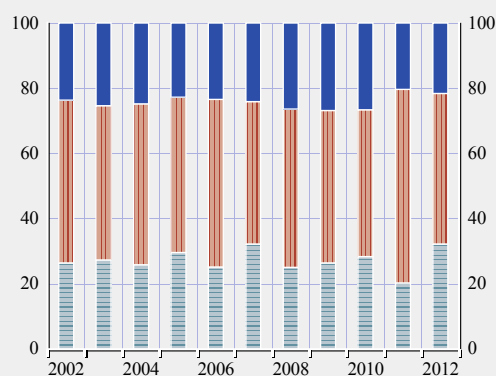
It is also worth mentioning that the share of secured market activity cleared through central counterparties (CCPs) continued to increase slightly, representing 55% of secured market transactions in 2012, compared with 51% in 2011. However, recent anecdotal evidence suggests that collateral rules might have been one of many factors that indirectly contributed to an increase in price differentiation, e.g. by imposing additional margins on repo transactions based on the geographic origin of the counterparty, the collateral or both and this may have made it more difficult to obtain repo funding via cross-border activity.

Chart 4 Geographical counterparty breakdown for secured and unsecured transactions

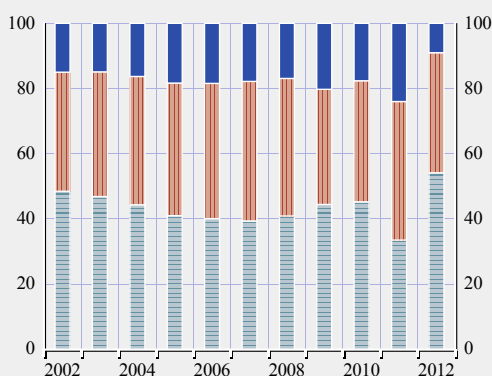
(percentage of total transactions)

- other
- euro area
- domestic

#### non-distressed countries



#### distressed countries



Source: ECB's Euro Money Market Survey.

## OTHER INDICATORS

### Short-Term European Paper (STEP)

In the years following the introduction of the euro, the integration of the short-term paper market evolved slowly relative to other market segments, reflecting differences in market practices, standards and legal frameworks across EU countries. In order to address this gap in financial integration, the STEP initiative was launched in 2006, aimed at developing a pan-European short-term paper market through the voluntary compliance of market participants with a core set of commonly agreed standards. One important caveat for a study of market integration based on STEP data is the concentration of the commercial paper market, with French issuers accounting for up to 50% of the data reported in STEP, followed by Dutch (14%) and Belgian issuers (11%). In 2012, the total outstanding volume increased sharply, particularly after the interest rate decision on 5 July, reaching a peak of EUR 478 billion in August. This trend might signal that investors' search for yield was initially confined to higher quality market instruments and higher rated euro area countries, which is another indication of market segmentation in the euro money market along national borders (see Special Feature A – Euro area money market segmentation in the present low interest rate environment).

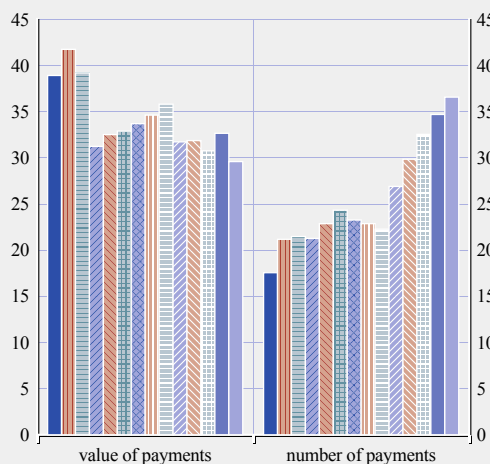
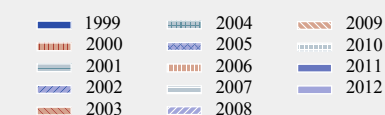
### TARGET 2

The rapid integration of money markets after 1999 was largely due to the creation of the Trans-European Automated Real-time Gross settlement Express Transfer system (TARGET), a payment system operated by the Eurosystem and designed to handle large-value euro payments. In May 2008 a second generation system, TARGET2, was launched. TARGET2 is based on a single shared platform, allowing the provision of a harmonised service level with a single price structure. In total, 24 EU central banks (including the ECB) and their national communities are members of TARGET2.<sup>4</sup> The last two members to join the system were the Bulgarian National Bank in 2010 and Banca Națională a României in 2011.

In 2012, TARGET2 settled a daily average of 354,185 transactions with a daily average value of €2.477 billion. TARGET2's share in total large-value payment system traffic in euro was 92%. Looking at the historical development (Chart 5), the volume of payments conducted through the above platform has increased, particularly since 2007, while the value of payments dropped in 2008 owing to a change in calculation methodology, and remained flat thereafter, reflecting the strained market activity during the financial crisis.

**Chart 5 TARGET2's share of inter-Member State payments in terms of volume and value**

(percentage of total payments)



Source: ECB.

<sup>4</sup> TARGET2 members are the ECB and all EU national central banks with the exception of the Bank of England, the Riksbank, the Czech and the Hungarian National Bank.

### 3 BOND MARKETS

#### Sovereign bond markets

Whereas, in 2010, at the outset of the sovereign debt crisis, only a few countries were strongly affected, in 2012, most non AAA-rated euro area countries came under pressure. In the first part of 2012, euro area sovereign bond markets continued to experience severe tensions and a significant degree of segmentation. In contrast, in the second half of 2012, the OMT announcement paved the way for noticeable improvements in bond markets.

#### PRICE-BASED INDICATORS

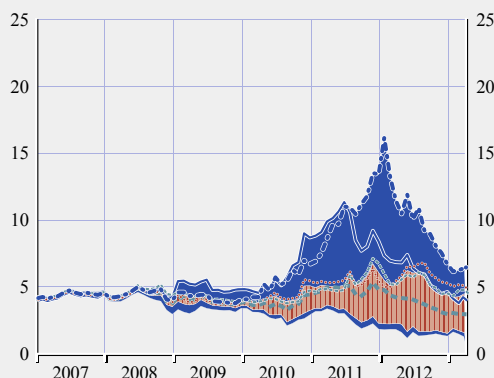
Considering information on asset prices first, Chart 6 show the dispersion of euro area sovereign bond yields for ten-year and two-year maturities with the interquartile range (i.e. the range between the third and the first quartile) and the range between the highest and the lowest yield together with the yields for some distressed countries and the average yield for the euro area in the period from 2007 to 2012 (for a long term perspective from 1990 to 2012, see Chart 13 in the Statistical Annex). After a period of convergence beginning in the late 1990s, dispersion was very low under the third stage of EMU in the period before the crisis, but started to increase in 2008, and has reached, in the first half of 2012, levels comparable with or exceeding those prevailing in the mid-1990s. The second half of 2012 was, however, characterised by a continuous improvement in terms of dispersion, especially at the two-year maturity, reflecting a positive market response to the OMT announcement and the commitment to move towards a banking union.

Chart 6 Dispersion of euro area sovereign bond yields

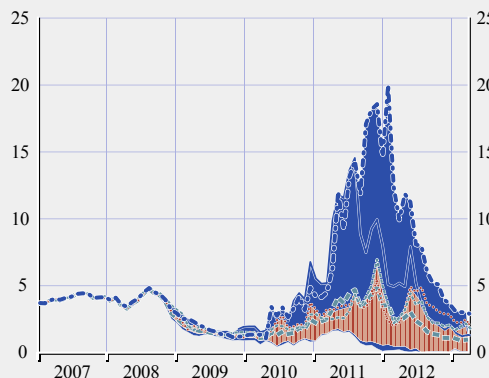
(percentages)

- min-max range
- interquartile range
- average euro area
- Ireland
- ⋯ Spain
- ⋯ Italy
- ⋯ Portugal

a) ten-year sovereign bonds



b) two-year sovereign bonds



Sources: Thomson Reuters and ECB.

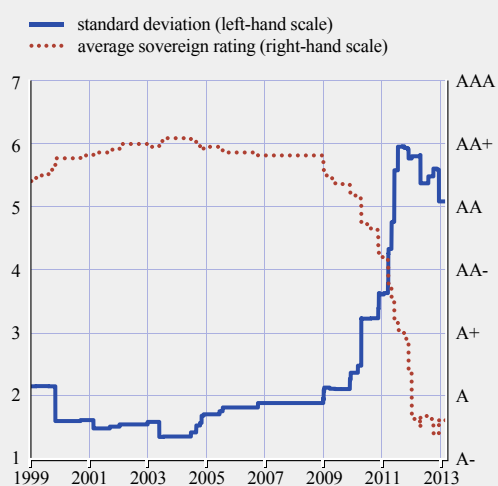
Note: The data used are based on the euro area country composition as in 2011. The yields for Cyprus, Estonia, Greece, Luxembourg, Malta, Slovakia and Slovenia are excluded owing to infrequent or missing observations.

This overall higher dispersion in 2011-2012 is mainly due to divergence between the bond yields of non-distressed and distressed euro area sovereigns. In particular, during the first half of 2012, the two groups of countries diverged further and the gap between the groups stayed at a high level, even in the midst of the significant but diminishing effect of the Eurosystem's two three-year LTROs. When OMTs were being anticipated by market participants in the summer of 2012 and then officially announced by the ECB on 6 September 2012, the yield gap between non-distressed and distressed countries reduced somewhat, although it remained elevated by historical standards.

This divergence between non-distressed countries and distressed countries is due to several factors.

First, it reflects diverging country "fundamentals", such as increasing differences in the perceived sustainability of balance of payments and sovereign fiscal positions, the health of the banking system, the tightness of bank-sovereign linkages (see Chart 14 in the Statistical Annex) and political uncertainties in some euro area countries. In some countries, declining confidence among market participants in policy-makers, and the retreat of cross-border investors, contributed further to a market perception of worsening "fundamentals". Positive policy steps, such as the establishment of a "fiscal compact"<sup>5</sup> and the creation of the euro area's permanent crisis management mechanism, the European Stability Mechanism (ESM), limited the divergence, although many market participants considered the timing of their implementation insufficient. Credit rating agencies' assessments of euro area sovereigns have also increasingly diverged since 2009, with a declining average euro area rating (see Chart 7).

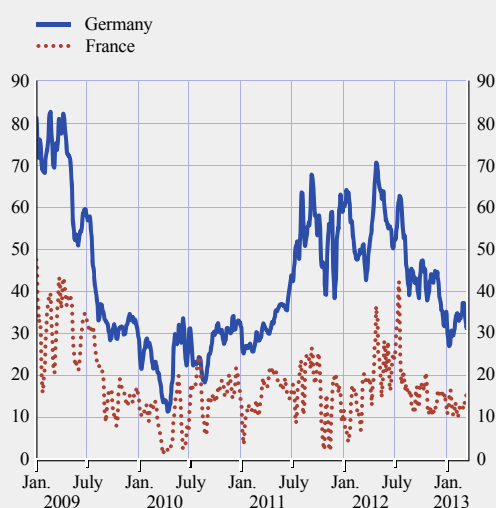
**Chart 7 Sovereign debt ratings and their dispersion in the euro area**



Sources: Thomson Reuters and ECB.  
 Note: The chart shows Standard & Poor's ratings for long-term sovereign debt. The right-hand side scale represents ratings expressed as letter grades. The left hand side scale represents the standard deviation of ratings expressed as numerical notches.

**Chart 8 Spreads of liquidity premia for agency bonds compared with sovereign bonds for Germany and France at ten-year maturity**

(5-day moving averages of daily data; basis points)



Sources: Thomson Reuters and ECB.  
 Note: Zero-coupon spreads between agency and government bond yields.

5 At the 1 March 2012 European Council, 25 European leaders signed the Treaty on Stability, Coordination and Governance, also known as the "fiscal compact", as agreed on 9 December 2011. It aims to strengthen fiscal discipline by means of stricter surveillance, notably by establishing a "balanced budget rule".



Second, yield dispersion is influenced by risk aversion among investors. For example, during 2003-2007, all euro area government bonds yields were similarly priced, irrespective of ratings and differences in fiscal positions between countries, which were already pronounced at that time. This reflected a high risk tolerance and therefore low risk premia. Since 2008, risk sensitivity has increased – and may in some cases have led to an overpricing of risk.

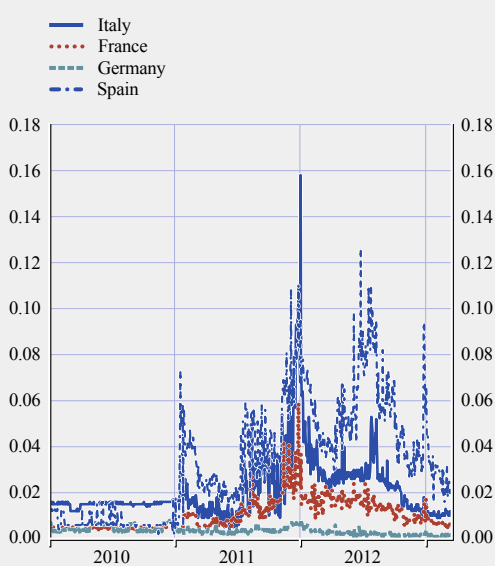
Third, closely related to the second factor, the divergence in yields can also be explained by liquidity effects. In particular, during periods of high tension, investors tend to shift their investment flows towards highly liquid bonds issued by non-distressed countries. Such “safe haven” flows depress the bond yields of non-distressed countries, most notably Germany, and increase the bond yields of distressed countries, thereby widening sovereign spreads. Typically, these safe haven flows manifest themselves in an increase in the spread between highly liquid government bonds and less liquid, but equally rated, agency bonds (see Chart 8). In the second half of 2012, these safe haven flows were reversed on the back of improving market sentiment after the OMT announcement, as illustrated by declining liquidity premia for some non-distressed countries as of September 2012.

Fourth, another important factor in the divergence of government bond yields in the euro area was the emergence of a perceived risk of a fundamental crisis of confidence in the euro area. Market tensions, characterised by high volatility and low liquidity conditions, emerged again around the summer of 2012, as illustrated by the sharp increase in the bid-ask spreads on ten-year sovereign bonds of some distressed countries (see Chart 9). This environment of strong financial stress put at risk the transmission of the Eurosystem’s single monetary policy. Therefore, on 6 September 2012, the Governing Council agreed to implement further extensive non-standard measures, the OMTs. OMTs allow for potential intervention on an unlimited scale, provided that the required strict and effective conditionality is fulfilled. This announcement has been a key factor in the decline of sovereign yields and in the normalisation of liquidity conditions since September 2012.

However, there is one caveat of using yield divergence as an indicator of financial integration. As argued by Battistini, Pagano and Simonelli (2013), financial integration can only be properly measured by price based indicators once risk premia are removed. This introduces the distinction between investor compensation for creditor’s specific risk embedded in risk premia, and the fact that segmentation should only be related to the compensation associated with the specific jurisdiction to which creditors belong to. These authors find that increasing spreads are indeed related to increasing risk premia, such that market segmentation has been actually more limited than shown by the yield dispersion not purged from risk premia.<sup>6</sup>

Chart 9 Bid-ask spread on ten-year sovereign bonds

(daily data; percentages points)



Sources: Bloomberg and ECB.

Note: The bid-ask spread is calculated as the difference between the bid and ask prices for sovereign debt at ten-year maturity.

6 Battistini N., Pagano M., and Simonelli S., Systemic Risk and Home bias in the Euro area, mimeo 2013.

## QUANTITY-BASED INDICATORS

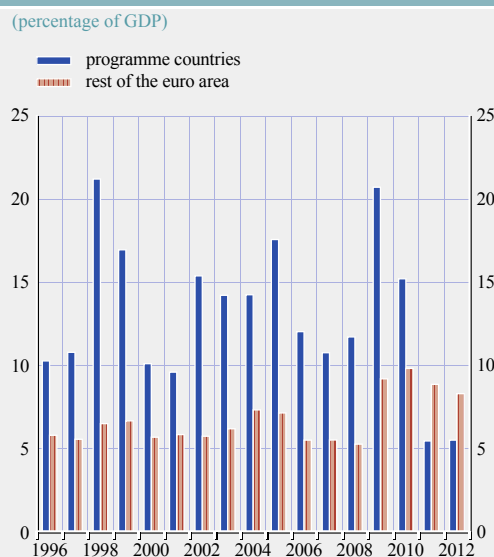
Another aspect of the integration of sovereign bond markets is related to quantity-based evidence, such as primary bond market issuance and cross-border holdings of government bonds.

Some countries have experienced hampered access to the primary bond market, especially during periods of significant market tensions. In particular, euro area countries currently under an EU-IMF programme continue to have limited market access (see Chart 10), although some progress towards regaining market access was observed in 2012.

Another element pointing to a reduced level of integration of euro area sovereign bond markets is the current low level of cross-border holdings of government bonds inside the euro area. Cross-border holdings of government bonds by euro area MFIs, as a share of total holdings, has been on a declining trend since 2006 and is now at levels last observed before the beginning of the third stage of EMU (see Chart 11). While the initial decline was due to portfolio reallocation to corporate bonds and international assets, the stronger decline from 2010 is most likely due to the intensification of the euro area sovereign debt crisis. Nevertheless, the observations in the second half of 2012 showed some signs of stabilisation in cross-border holdings inside the euro area, and even a slight increase, which may be due to stronger foreign buying of distressed countries' debt from other euro area countries owing to improving market sentiment following the OMT announcement.

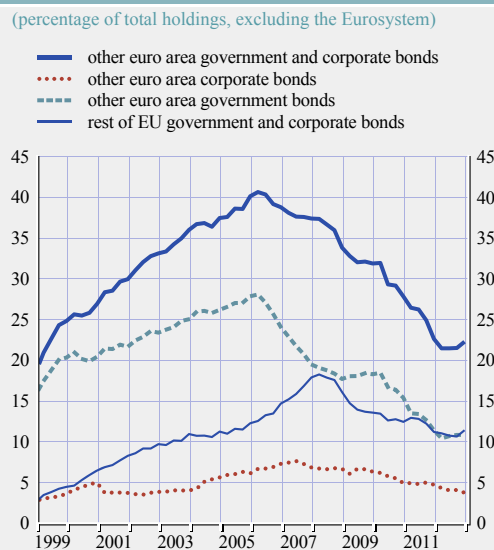
Overall, price-based evidence for euro area sovereign bond markets suggests that country-specific developments became increasingly important in 2011 and 2012 for sovereign debt pricing, reflecting differences in fiscal and balance of payments situations, economic outlooks, and increased risk aversion among investors. In addition, sovereign yields of some euro area countries started to reflect investors' concerns related to lower liquidity and dwindling confidence in the euro area. The convergence in yields observed after the announcement of OMTs may suggest that investors have started

**Chart 10 Government issuance activity by euro area country**



Sources: ECB, Eurostat (ESA 95 national accounts).  
Note: Issuance activity (gross issuances of long-term securities other than shares denominated in euro) of general government (central government + other general government) is expressed in terms of nominal GDP (GDP at current market prices in euro).

**Chart 11 Share of MFI cross-border holdings of debt securities issued by euro area and EU corporates and sovereigns**



Source: ECB.  
Note: Outstanding amounts are classified by the residency of the issuer.

to price into sovereign yields the Eurosystem's willingness to buy euro area government bonds on a potentially unlimited scale, thereby decreasing perceived default risk and associated premia. Quantity-based evidence confirms the assessment of lower bond market integration with impaired primary market access for some euro area countries and cross-border holdings of government bonds in the euro area at a low level.

### Corporate bond markets

#### PRICE-BASED INDICATORS

Corporate bond markets also experienced significant tensions in the first part of 2012, in particular related to the downgrades of distressed sovereigns and the various developments in sovereign yields described above. However, tensions in the corporate bond markets abated significantly as of the announcement of OMTs.

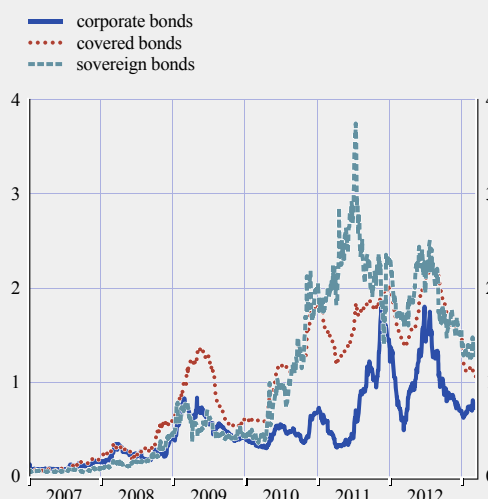
Chart 12 shows the dispersion of yields across countries for sovereign bonds, covered bonds and corporate bonds. After some signs of improvement with the two three-year LTROs, the divergence of corporate bond and covered bond yields across euro area countries increased again as of March 2012, reaching historically high levels in June 2012. In the second half of 2012, after the announcement of OMTs, the dispersion of corporate bond and covered bond yields declined significantly, reflecting developments in sovereign bond markets.

#### QUANTITY-BASED INDICATORS

Regarding quantity-based indicators, some types of instrument, most notably unsecured bank bonds were characterised by low issuance in 2012, particularly in distressed countries (see Chart 13). This is related to many different factors, including reduced funding needs following the three-year LTROs of the Eurosystem, higher borrowing cost in distressed countries, risk perception, the impact of

**Chart 12 Cross-country dispersion in covered bond, corporate bond and sovereign bond yields in the euro area**

(daily data; standard deviation; percentage points)

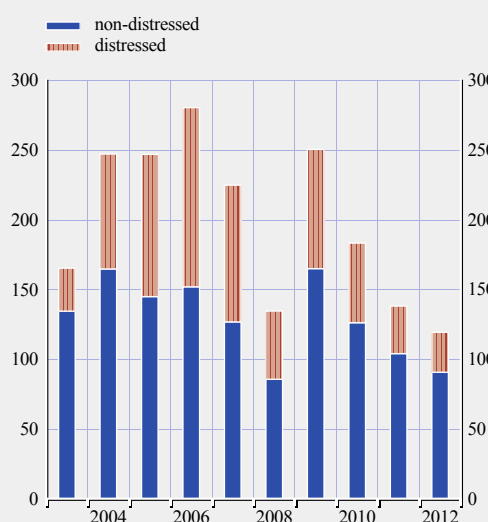


Sources: Datastream Thomson Reuters, Bloomberg and ECB calculations.

Note: Due to data availability, data only include observations for Germany, Spain, Finland, France, Italy, the Netherlands, Ireland and Austria.

**Chart 13 Volume of issuance of senior unsecured bank bonds at euro area level**

(EUR billions)



Sources: Dealogic DCM Analytics and ECB calculations.

Notes: Based on data available as at 31 December 2012. Retained and self-funded deals are not included. Euro area countries with a very small issuance are not included.

international regulation and the need for deleveraging. Although low issuance activity is not per se an indicator of a decline in financial integration, the evidence suggests that access to long-term debt financing (either senior unsecured or covered bonds) was more difficult in 2012 for banks in distressed countries than for banks in non-distressed countries. This can be interpreted as a signal of reduced integration in the market for banks' long-term debt financing.

The share of cross-border holdings of euro area corporate debt in total holdings of corporate debt securities declined further in 2012 (see Chart 11 in the government bond section). However, the share of cross-border holdings of the rest of the EU sovereign and corporate debt is still more than twice as high as it was before the third stage of EMU.

Overall, price-based evidence suggests that the corporate debt market was characterised by increased yield dispersion until mid-2012 probably reflecting the pricing of increased risk of some government bonds, but also higher market sensitivity to country specific news. After the announcement of OMTs in September, yield dispersion reverted to lower levels. Quantity-based indicators show some signs of reduced integration in the market for banks' long-term debt financing. Nevertheless, based on these indicators, it is difficult to disentangle the effects of fundamentals from those of the refinancing operations of the Eurosystem.

#### 4 EQUITY MARKETS

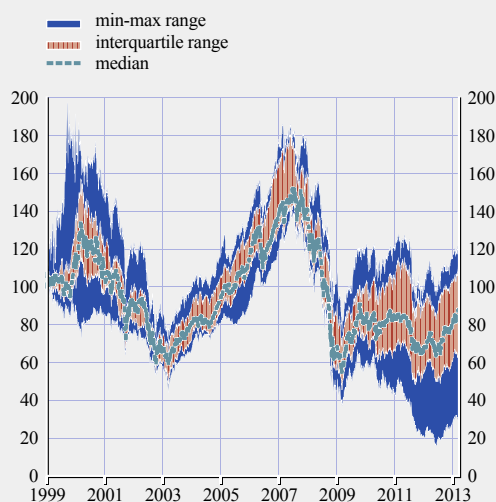
Recent developments in equity markets reveal a somewhat lower degree of cross-country heterogeneity than in bond markets. However, the euro area crisis has also tended to accentuate equity price divergence. Chart 14 shows the dispersion of euro area stock market indices, as characterised by the median, the interquartile range (i.e. the range between the third and the first quartile), and the range between the highest and the lowest index in the period from 1999 to 2012 (index: 1 January 1999 = 100). The continuous widening in market trajectories in 2010-2012 may be a reflection of the temporary loss of output associated with the unwinding of macroeconomic imbalances which had built up in the run-up to the financial and fiscal crises.

#### PRICE-BASED INDICATORS

In 2012, the continuation of the economic crisis, entailing considerable loss of output and employment in the corporate sector, especially of some countries, exacerbated heterogeneity in economic growth expectations among euro area countries. This is reflected in the divergence of stock market indices, which converged following the introduction of the euro, but have been on a diverging trend since 2010.

**Chart 14 Equity market indices in the euro area**

(index: 1 January 1999 = 100)



Sources: Thomson Reuters and ECB calculations.  
Note: The chart represents minimum, maximum and median equity market indices. Countries considered are Belgium, Ireland, Italy, France, Germany, Greece, Portugal and Spain.

To assess the extent to which stock markets are still integrated, even if price divergences are observed, several indicators can be used.

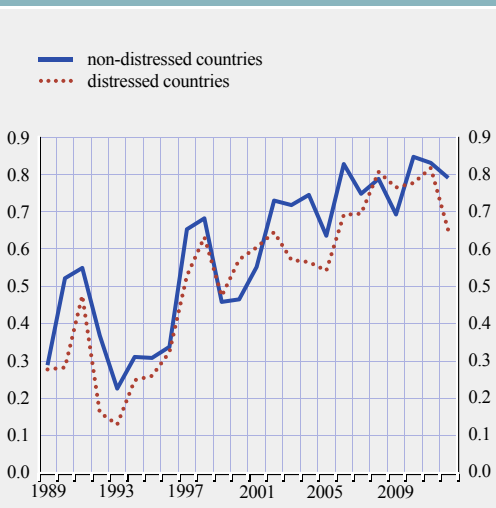
The first indicator, presented in Chart 15, shows the explanatory power of the first common factor extracted from daily stock returns based on country indices. A value close to 1 indicates that the country-specific shocks are irrelevant and that stock prices are driven by a single common factor.

The analysis is carried out separately for distressed and non-distressed countries. There is an overall positive trend between 1993 and 2010 for both groups of countries, indicating a stronger integration process. Since 2010, this indicator of integration has not changed significantly for the non-distressed countries, but it decreased for distressed countries from 82% to 68% between 2011 and 2012, its lowest level since 2006, reflecting the potential emergence of domestic risk factors. This recent movement may also indicate the heterogeneity in index composition between countries, and the fact that some sectors are more prone to reflect crisis tensions than others.

In addition, Chart 16 shows that over recent years, stock market volatility in euro area countries is largely explained by shocks stemming from the euro area, which account for about 45% of the total volatility on average. One factor contributing to the strength of the domestic influence is the interconnected risk between sovereigns and domestic banking sectors. By comparison, shocks stemming from the United States explain less than 25% of euro area stock market volatility over the same period.

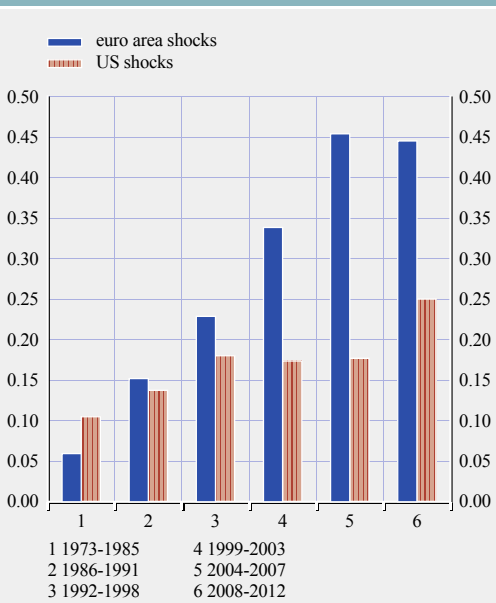
In the period from 2008 to 2012, however, an increase in domestic stock market sensitivity to the US market can be observed in the euro area. This increase is highly related to the global impact of the Lehman Brothers crisis, although euro area shocks have continued to be the main drivers of volatility in domestic markets. Over the same period, however, there has been a small decline in the euro area market impact on domestic markets, potentially related to the emergence of home bias and the pre-dominance

Chart 15 Equity market integration based on common factor portfolios



Sources: Thomson Reuters and ECB calculations. Note: For the technical details on the calculation of this indicator, see the notes to Chart 15 in the Statistical Annex.

Chart 16 Proportion of variance in euro area country equity returns explained by euro area and US stock market shocks

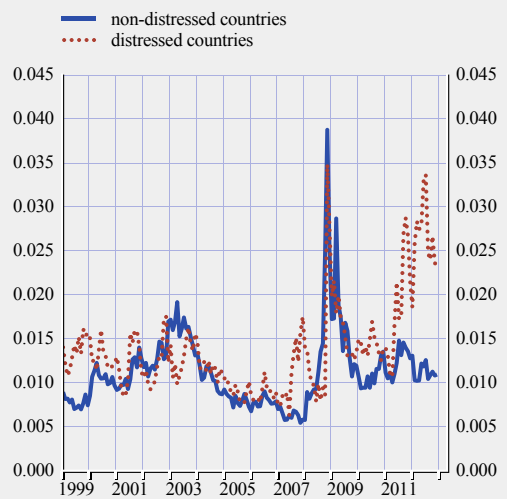


Sources: Thomson Reuters and ECB calculations. Notes: For details on the estimation methodology, see the notes to Chart 11 in the Statistical Annex. Calculations based on equity market indices at weekly frequency (1973-2012).

of country-specific shocks. If this is the case, then it may indicate increased segmentation in euro area equity markets.

This tendency towards segmentation in distressed countries is confirmed by the “segmentation index” presented in Chart 17. This index reflects a differential in returns between country-specific markets and the euro area: the higher the index, the stronger the segmentation. It can be seen that, until 2011, distressed and non-distressed countries presented a similar degree of segmentation, both being particularly strongly affected by the Lehman Brothers crisis. However, since 2011, while market segmentation for non-distressed countries has fluctuated around the long-term average, market segmentation for distressed countries reacted strongly to the euro area crisis, peaking at a level close to that observed during the Lehman Brothers episode.

**Chart 17 Equity market segmentation in distressed and non-distressed countries**



Sources: Thomson Reuters and ECB calculations.  
Note: For technical details on the calculation of this indicator, see notes to Chart 16 in the Statistical Annex.

### QUANTITY-BASED INDICATORS

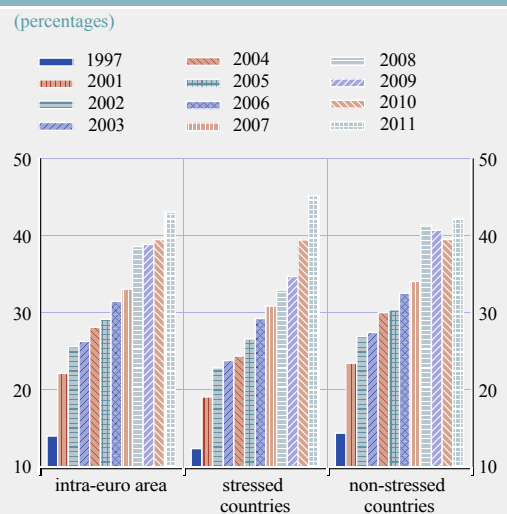
Euro area investment funds’ cross-border holdings of equity issued in other euro area countries have declined since the beginning of the financial crisis, reaching a level comparable to that prevailing in 2001 (Chart 18).

**Chart 18 Investment funds’ holdings of equity issued in other euro area countries and the rest of the world**



Source: ECB.

**Chart 19 The degree of cross-border holdings of equity issued by euro area residents**



Sources: IMF, Thomson Reuters and ECB calculations.  
Note: Intra-euro area is defined as the share of equity issued by euro area residents and held by residents of other euro area countries (excluding central banks).

More generally, the degree of intra-euro area cross-border holdings of equity issued by euro area residents (Chart 19) has increased steadily over the last decade: the advent of the euro area allowed investors to diversify portfolios without bearing currency risk, leading to higher cross-border holdings within the euro area.

## 5 BANKING MARKETS

Overall, there are signs that the trend towards fragmentation of euro area banking markets continued during 2012, further reversing some of the past achievements in this segment. Indicators of banks' cross-border activities, as well as prices and conditions of loans and deposits, reveal a lower degree of integration in 2012 than in the previous year. However, the move towards a "banking union" and the OMT announcement halted the fragmentation trend in mid-2012 in some cross-border banking markets.

### STRUCTURAL INDICATORS

Banks' cross-border activities can be measured by total assets of non-domestic branches and subsidiaries of euro area banks within euro area countries. The share of total assets of these affiliates in the total assets of the domestic banking system is calculated for each euro area country. Then, the level and dispersion of these country shares are described by the first and the third quartiles as well as by the median (Chart 20). Cross-border activity increased strongly and steadily between 1999 and 2008. Owing to the financial crisis, the share of assets held by foreign branches and subsidiaries of euro area banks has been decreasing since 2008. A substantial increase in cross-country differences can also be observed. This might point to a lower degree of banking market integration.

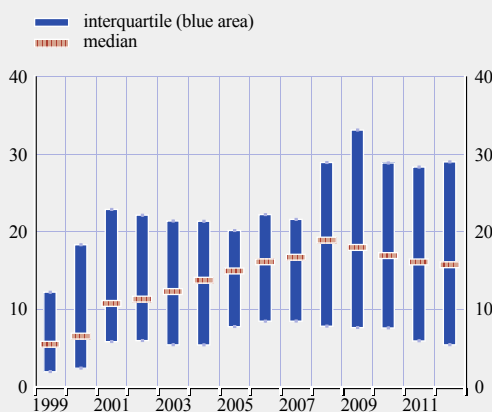
### ACTIVITY-BASED INDICATORS

In 2012, the negative trend in cross-border interbank lending came to a halt, after a strong decline in 2011. In total, cross-border MFI loans to other MFIs in the EU have declined by around 30% since the start of the financial crisis, following a strong increase in the years between the introduction of the euro and the beginning of the crisis (Chart 21). This can be explained in part by a higher perception of risk for non-domestic interbank loans owing to the sovereign debt crisis. Since mid-2012, positive signals given by the announcement of the ECB's OMT programme and the prospect of a banking union in Europe have stopped the decline in cross-border interbank lending.

The less integrated market for MFI loans to non-MFIs, including households, non-financial corporations and other financial institutions, proved to be comparatively robust, despite the financial and sovereign crises. In 2012, cross-border activity in this market segment remained relatively stable. In the fourth quarter of 2012, cross-border MFI loans to non-MFIs in the EU

**Chart 20 Dispersion of the total assets of foreign branches and subsidiaries of euro area banks across euro area countries**

(percentage of the total assets of the euro area banking sector)

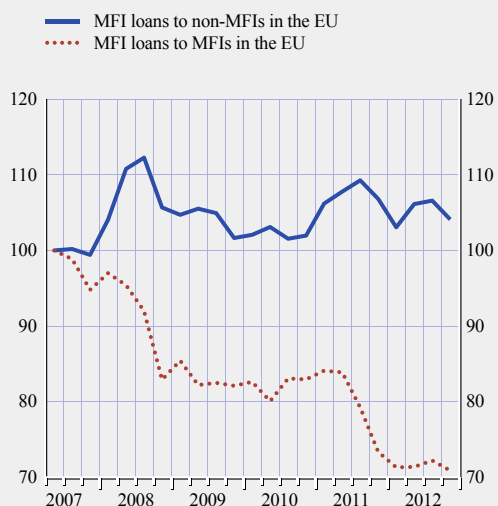


Source: ECB.

Note: The chart displays the median for the share of cross-border assets and the overall dispersion across countries.

**Chart 21 Cross-border MFI loans to MFIs and non-MFIs in the EU**

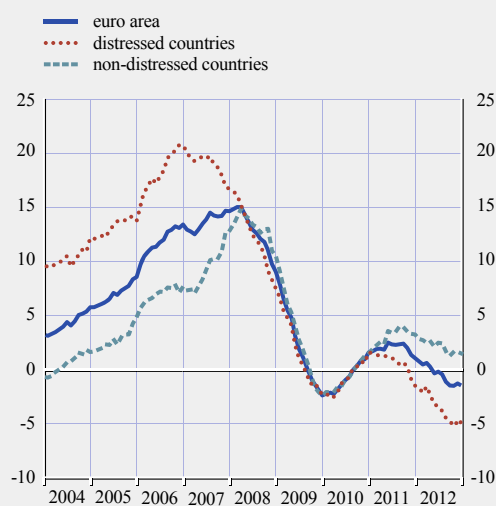
(index: Q2 2007 = 100)



Source: ECB.

**Chart 22 MFI loans to non-financial corporations**

(annual loan growth; percentages)



Source: ECB.

accounted for 7.6% of total MFI loans to non-MFIs, while domestic loans accounted for 87.9% and loans to the rest of the world accounted for 4.5% (see Chart 22 in the Statistical Annex).

The dispersion of growth in bank loans to non-financial corporations across the distressed and the non-distressed country groups has substantially increased (Chart 22). For the group of distressed countries, the loan growth even turned negative, reaching lower levels than in 2010, at which time all Member States were affected. There was also a period of a wide dispersion in loan growth across countries before the onset of the crisis. However, between 2004 and 2008, loan growth was stronger in the distressed countries than in the non-distressed countries, whereas in 2012 the reverse was true. This development follows the pattern of a boom-bust cycle. The divergence between these groups of countries can be explained by differences in demand for and/or access to credit across Member States, which may reflect differences in the economic outlook (e.g. economic growth and unemployment), the state of their banking systems (e.g. deleveraging pressure, cost of funding) and/or domestic sovereign risk (e.g. national indebtedness).

### SURVEY-BASED INDICATORS

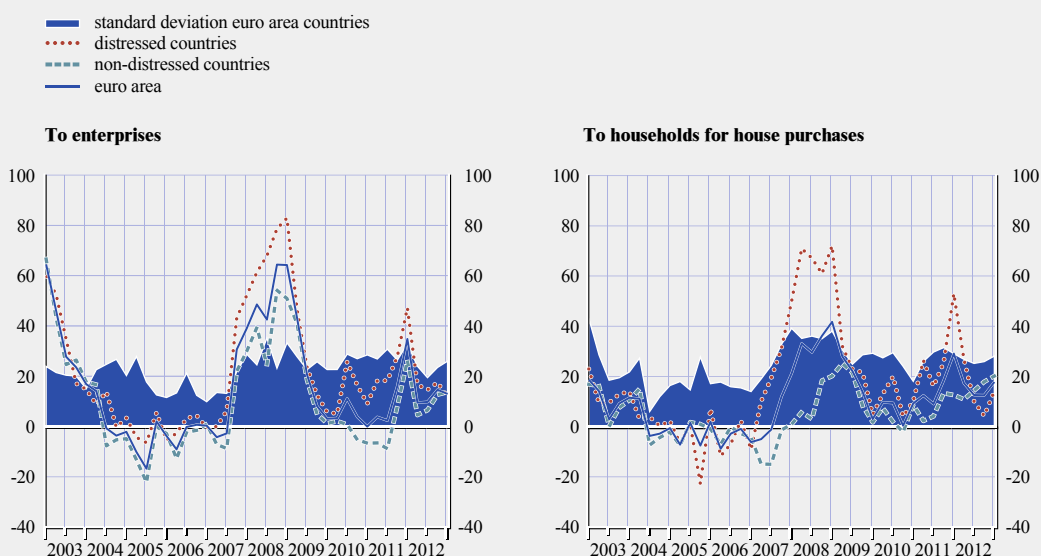
The euro area bank lending survey asks banks on a quarterly basis about changes in their credit standards applied to the approval of loans to companies and households in euro area countries. A permanent divergence between the groups of countries would indicate persistent disparities in borrowers' access to credit across countries which may reflect both divergent developments in banks' cost of funds and balance sheets as well as in overall credit risk.

Recently, the changes in credit standards applied to the approval of loans or credit lines to enterprises suggest some convergence (Chart 23). By contrast, the credit standards applied to loans to households for house purchases have temporarily moved in opposite directions in the two groups of countries in the second half of 2012 (Chart 23). For the first time since 2006,



Chart 23 Changes in credit standards applied to the approval of loans or credit lines

(net percentage of banks indicating a tightening of standards)



Sources: Euro area bank lending survey (BLS) and ECB calculations.  
Note: A positive number reflects a tightening of credit standards.

credit standards for loans to households tightened more in non-distressed countries in the third quarter 2012, than in distressed countries. However, the latest data point to a convergence of the two country groups.

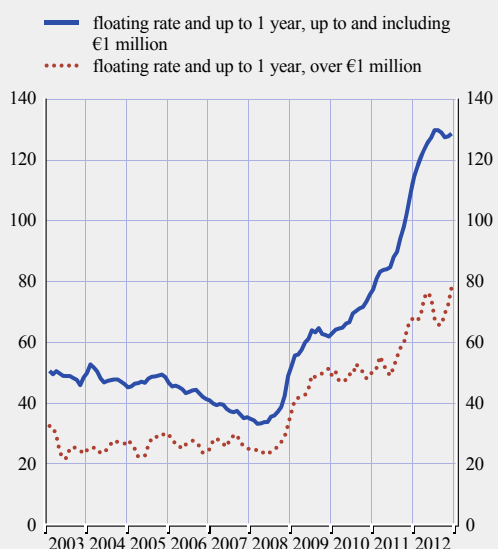
### PRICE-BASED INDICATORS

The financial crisis has also left its trace in price indicators in the banking markets. From the perspective of financial integration, the increasing divergence of interest rates on new loans to non-financial corporations and on deposits for households across euro area countries is a clear signal of fragmentation and heterogeneity in European banking markets.

Chart 24 shows the cross-country dispersion of bank interest rates applied to new loans to non-financial corporations in the euro area. The dispersion of short-term loans with a floating rate intensified in the course of 2012. In particular, for lower-value short-term retail loans, the price dispersion reached new peaks in 2012. Heightened sovereign risk may be the driving factor behind this development, but other factors, such as different market conditions (e.g. costs of funding for banks; credit quality), may also have contributed and

Chart 24 Cross-country standard deviation of MFI interest rates on new loans to non-financial corporations

(unweighted; basis points)



Source: ECB.

could partly explain this spread. Chart 24 also shows that the dispersion of bank interest rates on loans of up to €1 million is greater than for loans of more than €1 million, so small and medium-sized enterprises (SMEs) may have been more affected by the financial crisis than larger firms.

Additional evidence of further fragmentation in banking markets is provided by the widening dispersion of deposit rates in the euro area (Chart 25). This development indicates a stronger differentiation in the cost of funding. Especially banks in distressed countries have to offer better conditions than banks in non-distressed countries to fund themselves with customer deposits. However, the average deposit rate for the euro area has decreased slightly, which points to lower bank funding costs in the second half of 2012 than at the beginning of the year 2012.

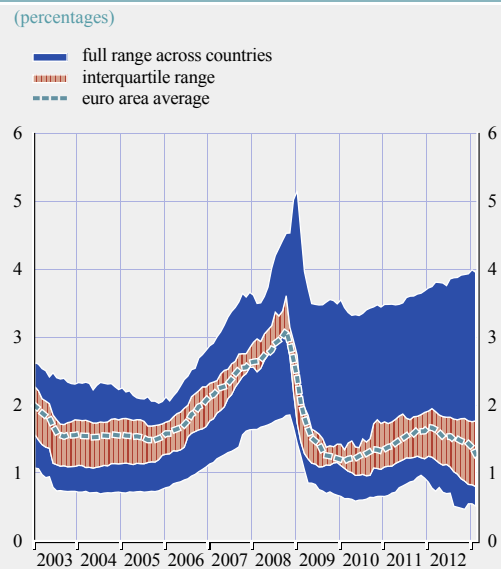
#### OTHER INDICATORS

Another perspective on banking market integration is gained by looking at retail payments. The realisation of a more efficient and harmonised retail payments infrastructure facilitates trade, increases competition and innovation, fosters financial integration and adds to the completion of the monetary union. Further harmonisation of procedures, instruments and services offered to customers is being addressed in the context of the Single Euro Payments Area (SEPA) project. In SEPA, payment schemes and infrastructures are expected to establish EU-wide reach. Migration from national credit transfers and direct debits to SEPA credit transfers (SCT) and SEPA direct debits (SDD) is under way.

Chart 26 shows the share of euro area SCT and SDD transactions as a percentage of the total volume of all credit transfers and direct debits processed by clearing and settlement mechanisms (CSMs) located in the euro area.

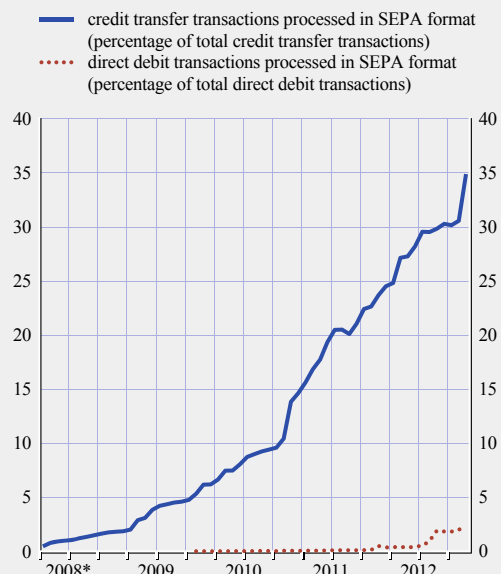
The chart shows a steady increase in the share of credit transfer transactions processed in SEPA format since its launch in 2008. The share of direct debit transactions processed in SEPA format has developed quite slowly, remaining well below 3% since its start in October 2009 (Chart 26).

**Chart 25 Interest rates on MFI deposits for households in the euro area**



Source: ECB.  
Notes: Deposit rates are aggregated using outstanding amounts.

**Chart 26 Credit transfer and direct debit transactions processed in SEPA format in the euro area**



Source: ECB.  
\* 28 Jan 2008 - 29 Feb 2008

However, this share is expected to increase following the adoption of the SEPA migration end-date Regulation in March 2012,<sup>7</sup> which lays down a clear timeline for migration to the new European payment instruments. For the euro area, the final deadline is 1 February 2014, while the deadline for euro-denominated payments in non-euro area Member States is 31 October 2016. As of these dates, existing national euro credit transfer and direct debit schemes will have to be phased out and replaced by the pan-European SEPA alternatives. The ECB welcomed and supported the legislative proposal in its Opinion of 7 April 2011. More details on the euro retail payments market are presented in Special Feature B, which discusses the development of the SEPA project as well as the benefits of SEPA and remaining challenges.

<sup>7</sup> Regulation (EU) No 260/2012 of the European Parliament and of the Council of 14 March 2012 establishing technical and business requirements for credit transfers and direct debits in euro and amending Regulation (EC) No 924/2009 (OJ L 94, 30.3.2012, p. 22).



## CHAPTER II

### EUROPEAN INSTITUTIONAL REFORM

#### THE SINGLE SUPERVISORY MECHANISM: A PIVOTAL STEP TOWARDS A BANKING UNION

*The financial crisis underscored the need to create an integrated regulatory and supervisory framework for the financial services sector. In this context, the agreement reached on establishing a single supervisory mechanism (SSM) by the Council (ECOFIN) in December 2012 constitutes a milestone in European financial integration by elevating responsibility for banking supervision to the European level. The establishment of the SSM is one of the pillars of the banking union, which in turn forms one of the four building blocks of the enhanced governance framework of the Economic and Monetary Union envisaged in the Report “Towards a genuine Economic and Monetary Union” of June 2012.*

#### I INTRODUCTION

The financial crisis has made the need for a more integrated regulatory and supervisory framework for the financial services sector evident. An important step towards this aim is the establishment of the SSM.

This chapter touches upon the rationale for the establishment of the SSM and describes the main features of the proposed SSM Regulation<sup>1</sup> to provide an overview of the legal framework. It also looks at the main benefits of the SSM for financial stability and financial integration, as well as the remaining challenges to completing the banking union and the steps required to operationalize the framework within which the ECB shall carry out the tasks conferred upon it by the proposed SSM Regulation.

#### 2 RATIONALE FOR ESTABLISHING THE SSM

The financial crisis has demonstrated the rapidness with which financial distress can spread from one financial institution to other financial institutions and to sovereigns, particularly in a highly interconnected and integrated financial system such as the euro area, and in the context of strong linkage between sovereign and the banking sector thereby even threatening the financial stability of the euro area banking system.

The crisis also showed that supervision structured along national lines, with merely supervisory cooperation agreements in place, lacks the required robustness and coherent supervisory practices to support the high degree of financial integration in the European Union.

In order to stabilise the financial system, weaken the destabilising link between banks and sovereigns, and reverse the process of financial market fragmentation resulting from the retrenchment behind national borders to curtail contagion, the euro area needed to substantially strengthen its supervisory and regulatory framework and create a safety net at European level. The approach of having deeply integrated financial markets, with the objective of maintaining financial stability in the same market through national policies, is not enough. Thus, a new framework needed to be created, bringing incentives into line with an internal market for banking services that is supported by a monetary union.

<sup>1</sup> This Chapter is based on proposal for a Council Regulation conferring specific tasks on the European Central Bank concerning policies relating to the prudential supervision of credit institutions, 14 December 2012 (SSM Regulation), <http://register.consilium.europa.eu/pdf/en/12/st17/st17812.en12.pdf>.

In this context, a milestone was reached on 13 December 2012, when the Council (ECOFIN) reached agreement on proposals aimed at establishing a SSM.<sup>2</sup>

This agreement is a landmark in the process of European integration as it confers at the European level specific supervisory tasks relating to the prudential supervision of credit institutions to the ECB within the SSM framework over all euro area credit institutions, with an option for non-euro area supervisory authorities to join.

The establishment of the SSM constitutes the first step towards the creation of a banking union, aimed at creating an integrated framework for the financial sector as set out in the report “*Towards a genuine Economic and Monetary Union*” which was prepared by the Presidents of the Council, the European Commission, the Eurogroup and the European Central Bank.<sup>3</sup>

The integrated framework envisages the creation of a banking union covering supervision, resolution and deposit insurance.

These three elements together constitute the Banking Union and are intended to provide a European dimension to the main pillars for safeguarding the robustness and stability of the banking sector. These three blocks form, together, a coherent set of policies, which are difficult to dissociate in the long run.

### 3 MAIN FEATURES OF THE PROPOSED SSM REGULATION

The SSM will be a mechanism composed of the ECB and national competent authorities of euro area countries, with the national competent authorities of non-euro area Member States being able to participate through the establishment of close cooperation with the ECB, whereby the responsibility for specific supervisory tasks will be conferred to the ECB. The ECB will be responsible for the effective and consistent functioning of the SSM.<sup>4,5</sup> An important element that will be supportive to the effectiveness of the SSM, is the completion of the single rulebook, which in a substantial way already exists and whose implementation is overseen by the EBA.

The conferral of supervisory tasks to a central bank is quite common; many other central banks are assigned responsibilities that combine these two functions. The crisis has strengthened the trend of central banks acquiring supervisory responsibilities, thereby also reaping the synergies between macro- and micro-prudential supervision.

In its supervisory function, the ECB will be assisted by national supervisory authorities who have long-established expertise in supervision. This cooperation includes the assistance of national competent authorities with the on-going day-to-day assessment of a bank’s situation and related on-site inspections.<sup>6</sup> Furthermore, the ECB will also closely cooperate with the European Banking Authority (EBA), the European Securities and Markets Authority (ESMA), the European Insurance and Occupational Pensions Authority (EIOPA) and the European Systemic Risk Board (ESRB) within the framework of the European System of Financial Supervision (ESFS), which was established in 2010.<sup>7</sup> In addition, the ECB will also cooperate closely with the authorities

2 See the ECOFIN Council press release at [http://www.consilium.europa.eu/uedocs/cms\\_Data/docs/pressdata/en/ecofin/134287.pdf](http://www.consilium.europa.eu/uedocs/cms_Data/docs/pressdata/en/ecofin/134287.pdf).

3 “*Towards a genuine Economic and Monetary Union*”, European Council, 26 June 2012.

4 See Article 5(1) of the proposed SSM Regulation. <http://register.consilium.europa.eu/pdf/en/12/st17/st17812.en12.pdf>.

5 See the Opinion of the European Central Bank of 27 November 2012, available at [http://www.ecb.int/ecb/legal/pdf/en\\_con\\_2012\\_96\\_f.pdf](http://www.ecb.int/ecb/legal/pdf/en_con_2012_96_f.pdf).

6 See recital 28 and Article 5(3) of the proposed SSM Regulation, <http://register.consilium.europa.eu/pdf/en/12/st17/st17812.en12.pdf>.

7 See Article 3(1) of the proposed SSM Regulation, <http://register.consilium.europa.eu/pdf/en/12/st17/st17812.en12.pdf>.

empowered to resolve credit institutions and the European Financial Stability Facility (EFSF) and the European Stability Mechanism (ESM).<sup>8</sup>

The section below describes the specificities of the provisions of the proposed SSM Regulation, including the scope of supervisory tasks and powers conferred upon the ECB, as well as the safeguards to ensure a clear separation between the monetary policy and supervisory functions of the ECB.

### 3.1 SCOPE OF THE SINGLE SUPERVISORY MECHANISM

The **scope of the proposed SSM Regulation** is very broad, covering more than 6,000 credit institutions established in the euro area. The fact that all credit institutions in the euro area fall within the scope of the SSM - albeit a differentiated approach regarding the conduct of supervision is envisaged - is an essential element of the mechanism. The recent crisis has illustrated that not only larger banks can pose systemic risks. Due to interlinkages, smaller but more numerous regional institutions can also be systemic as a group and thus destabilise countries and regions. Important factors in this context are the interconnectedness of the banking sector and the interlinkages between banks and sovereigns.

Furthermore, with a view to maintaining and deepening the internal market, the proposed SSM Regulation allows supervisory authorities of non-euro area Member States to participate in the SSM through the establishment of close cooperation. The SSM Regulation aims at ensuring equal treatment of participating Member States whose currency is the euro and participating Member States whose currency is not the euro which have established a close cooperation with the ECB. A pre-condition for entering into close cooperation with the ECB is the confirmation that measures requested by the ECB will be adopted and complied with by the respective national competent authorities in the Member States wishing to participate.<sup>9</sup> Once close cooperation has been established, the ECB will conduct supervision of credit institutions established in a Member State whose currency is not the euro by means of instructions to national authorities.

As regards the **conduct of supervision** a differentiated approach is envisaged in the proposed SSM Regulation for those credit institutions falling under the direct supervision of the ECB and those credit institutions that will be primarily subject to supervision by national competent authorities. In concrete terms, this means that the ECB will focus its direct supervision on those banks, banking groups and respective entities that are considered to be significant. The thresholds (on a consolidated basis) that determine whether a credit institution is significant and should therefore fall under the direct supervisory responsibility of the ECB are that:

- (i) the total value of its assets exceeds €30 billion; or
- (ii) the ratio of its total assets over the GDP of the participating Member State of establishment exceeds 20%, unless the total value of its assets is below €5 billion; or
- (iii) following a notification by its national competent authority that it considers such an institution of significant relevance with regard to the domestic economy, the ECB takes a decision confirming such significance following a comprehensive assessment by the ECB, including a balance-sheet assessment, of that credit institution.<sup>10</sup>

<sup>8</sup> See Article 3(3) and 3(4) of the proposed SSM Regulation, <http://register.consilium.europa.eu/pdf/en/12/st17/st17812.en12.pdf>.

<sup>9</sup> See recital 29 and Article 6(2) of the proposed SSM Regulation, <http://register.consilium.europa.eu/pdf/en/12/st17/st17812.en12.pdf>.

<sup>10</sup> See Article 5 of the proposed SSM Regulation, <http://register.consilium.europa.eu/pdf/en/12/st17/st17812.en12.pdf>.

Furthermore, the ECB shall carry out the tasks conferred upon it by the SSM Regulation in respect of the three most significant credit institutions in each of the participating Member States, unless justified by particular circumstances. In addition, the ECB may also, on its own initiative, consider an institution to be of significant relevance where it has established banking subsidiaries in more than one participating Member States and its cross-border assets or liabilities represent a significant part of its total assets or liabilities. Furthermore, banks that have requested or received public financial assistance directly from the EFSF or the ESM will also be considered to be of significant relevance.<sup>11</sup>

With regard to less significant credit institutions, these will be subject to decisions by national supervisors and the ECB will issue regulations, guidelines or general instructions to the national competent authorities. Moreover, the ECB will be able to require national competent authorities to notify the ECB of any material supervisory procedure, to conduct further assessment and/or transmit to the ECB draft supervisory decisions. The ECB will retain the power to request information, to conduct investigations and on-site inspections. Where necessary to ensure consistent application of high supervisory standards, the ECB may at any time, on its own initiative and after consulting with national authorities, or at the request of a national competent authority, decide to exercise direct supervision.<sup>12</sup>

### 3.2 SUPERVISORY TASKS AND POWERS OF THE ECB

The proposed SSM Regulation confers on the ECB certain key supervisory tasks necessary for the supervision of credit institutions, notably all key tasks related to the prudential supervision of credit institutions, while all tasks not specified in the Regulation would remain within the competence of national competent authorities. Thus the **ECB will be responsible for an extensive set of tasks** ranging from the authorisation of credit institutions to carrying out early interventions in the case of financial distress of a credit institution. The main micro-prudential tasks conferred on the ECB are set out in Box 1. The conduct of these tasks will be done in accordance with the provisions laid out in the SSM Regulation.

Some supervisory tasks will remain at national level and thus continue to be the responsibility of national competent authorities. These include the supervision of credit institutions from third countries establishing a branch in the Member State concerned and matters related to consumer protection, money laundering and payment services.<sup>13</sup>

Additionally, as mentioned above, for banks that are considered to be non-significant, national authorities will remain competent as regards the conduct of supervisory tasks. The conduct of these tasks will be subject to the ECB's general oversight framework.

**The ECB will have an extensive set of powers.** In order to carry out its supervisory tasks, the ECB may conduct all necessary investigations and on-site inspections, adopt guidelines, recommendations and regulations and obtain all the information that is necessary from the financial institutions in the participating Member States, as well as persons belonging to those entities and third parties to whom the financial institution has outsourced operational functions or activities. Finally, in order to be able to enforce supervisory rules and decisions, the ECB also has sanctioning powers.

11 See Article 5 of the proposed SSM Regulation, <http://register.consilium.europa.eu/pdf/en/12/st17/st17812.en12.pdf>.

12 See Article 5(5)(b) of the proposed SSM Regulation, <http://register.consilium.europa.eu/pdf/en/12/st17/st17812.en12.pdf>.

13 See recital 22 and Article 4 of the proposed SSM Regulation, <http://register.consilium.europa.eu/pdf/en/12/st17/st17812.en12.pdf>.

## Box I

**MICRO-PRUDENTIAL TASKS CONFERRED UPON THE ECB, INCLUDE:<sup>1</sup>**

- authorisation and withdrawal of authorisation of credit institutions;
- for credit institutions in participating Member States which wish to establish branches in non-participating Member States, the ECB would conduct the supervisory tasks the competent authority of the home Member State would have;
- assessing applications for the acquisition and disposal of qualifying holdings in credit institutions;
- ensuring compliance with prudential requirements imposed on credit institutions in the areas of own funds requirements, securitisation, large exposure limits, liquidity, leverage, and reporting and public disclosure of information on those matters;
- ensuring compliance with requirements imposed on credit institutions to have in place robust governance arrangements, including fit and proper requirements for persons responsible for the management of credit institutions, risk management processes, internal control mechanisms, remuneration policies and practices, and effective internal capital adequacy assessment processes;
- carrying out supervisory reviews, including stress tests, and on the basis of the review to impose specific additional own funds requirements, publication requirements, liquidity requirements and other measures;
- carrying out supervision on a consolidated basis of credit institutions' parents established in one of the participating Member States, including supervision of financial holding companies and mixed financial holding companies, and participating in colleges of supervisors without prejudice to the participation of national competent authorities of participating Member States in these colleges as observers, in relation to parents not established in one of the participating Member States;
- participating in supplementary supervision of a financial conglomerate in relation to the credit institutions included in it and assume the tasks of coordinator where the ECB is appointed as such on the basis of relevant Union law;
- carrying out supervisory tasks in relation to recovery plans, and early intervention where a credit institution does not meet or is likely to breach the applicable prudential requirements and in cases stipulated by Union law, structural changes required from credit institutions to prevent financial stress or failure, excluding any resolution powers.

<sup>1</sup> See Article 4 of the proposed SSM Regulation, <http://register.consilium.europa.eu/pdf/en/12/st17/st17812.en12.pdf>.



As regards macro-prudential tasks and tools, the SSM Regulation stipulates that, in addition to the competence of national competent authorities in this field, the ECB, according to the procedures foreseen in Union law, may apply certain measures addressing systemic or macro-prudential risks.<sup>14</sup> These measures include applying higher requirements for capital buffers, in particular counter-cyclical buffer rates. Macro-prudential instruments which are not specified in Union law, such as loan-to-income and loan-to-value ratios, will remain the sole responsibility of national authorities. The conferral of specific macro-prudential tasks on the ECB is an important element, as macro- and micro-prudential risks can be mutually reinforcing, provided some organisational arrangements are in place to prevent conflicts of perspectives and objectives that may also arise.

In particular, the proposed SSM Regulation allows Member States either to act on their own initiative when applying macro-prudential tools or to request that the ECB act. In addition, the ECB may on its own initiative apply more stringent macro-prudential tools in consultation with the relevant competent authority in each participating Member State. Thus, the proposed SSM Regulation allows both the national authorities and the ECB to take action. Their action will, however, be subject to a mutual consultation obligation and close collaboration on these issues will be essential. Both the national authorities and the ECB must inform each other of their intentions ten working days prior to taking action and duly consider possible related objections in reply, before proceeding with the decision. In addition, when acting on the basis of a request from a Member State or on its own initiative, the ECB will have to take into account the specific financial and economic situation of the Member State concerned.<sup>15</sup> The underlying rationale for this comes from the varying economic cycles of Member States. This flexible application of national and ECB competences will allow the SSM to ensure a level playing field, and address financial stability concerns at the relevant level; sub-national, national or wider.

### 3.3 GOVERNANCE OF THE SSM

The SSM Regulation provides specific safeguards that aim to mitigate potential conflicts of interest between the ECB's monetary policy function and its supervisory function, in particular as regards ensuring the differentiated functioning of the Governing Council in relation to its monetary policy and supervisory functions. The specific features that are introduced as safeguards include:

- (i) the establishment of a Supervisory Board;
- (ii) the deliberations of the ECB Governing Council on supervisory matters will be strictly separated from its monetary policy work, including separate agendas and meetings;
- (iii) the four representatives of the ECB appointed by the Governing Council in the Supervisory Board shall not perform duties directly related to the monetary function of the ECB;
- (iv) the staff involved in carrying out supervisory tasks will be organisationally separate and subject to separate reporting lines;
- (v) a mediation panel will be established to resolve differences of views expressed by the competent authorities of participating Member States regarding an objection of the Governing Council to a draft decision by the Supervisory Board.<sup>16</sup>

14 See Article 4a of the proposed SSM Regulation, <http://register.consilium.europa.eu/pdf/en/12/st17/st17812.en12.pdf>.

15 See Article 4a(3) of the proposed SSM Regulation, <http://register.consilium.europa.eu/pdf/en/12/st17/st17812.en12.pdf>.

16 See Article 18 of the proposed SSM Regulation, <http://register.consilium.europa.eu/pdf/en/12/st17/st17812.en12.pdf>.

While the Governing Council will be ultimately responsible for taking decisions, the Supervisory Board will be fully responsible for the preparation of decisions on supervisory matters. The Supervisory Board shall prepare draft decisions which will be deemed adopted by the Governing Council unless it objects within ten working days. In order to support the work of the Supervisory Board, a steering committee with rotating membership from among the Board's members and a secretariat will be established.

Thus, the Supervisory Board will be an essential body in the conduct of supervisory tasks. It will be composed of a Chair and Vice-Chair elected for non-renewable five-year terms, and include representatives from the ECB and from national authorities.

The Supervisory Board may also invite representatives of the European Commission as observers. In addition, the Chair of the European Resolution Authority, once established, shall participate as observer.<sup>17</sup>

Decisions of the Supervisory Board shall be taken by simple majority, except in the case of decisions for the adoption of regulations, which requires a qualified majority, analogous to the voting rules in the Council of the EU.<sup>18</sup>

In order to ensure that national supervisors of non-euro area Member States that enter into a close cooperation with the ECB are placed on an equal footing with euro area Member States, the SSM Regulation stipulates that they will have full membership of and full voting rights on the Supervisory Board.<sup>19</sup>

### 3.4 ACCOUNTABILITY

High standards of democratic accountability should apply, ensuring that the ECB uses its supervisory powers in the most effective and proportionate way. With a view to its ESCB tasks, the ECB is already accountable, and it is logical that when more tasks are conferred, more accountability is necessary. This higher level of democratic accountability should however not compromise the ECB's independence.

To this end, the SSM Regulation specifies that the ECB will be accountable to the European Parliament and the Council of Ministers. In addition, the ECB shall submit an annual report to the European Parliament, the Council, the European Commission and the Eurogroup on the execution of the tasks conferred upon it by the SSM Regulation. The Chair of the Supervisory Board shall present this annual report to the European Parliament and the Eurogroup in the presence of representatives from any participating Member States with which it has established close cooperation. In addition, the European Parliament may request to hear the Chair of the Supervisory Board. Furthermore, the national parliaments of the participating Member States may invite the Chair of the Supervisory Board to exchange views on a particular credit institution in its country. Finally, national parliaments may also request the ECB to reply to questions related to supervisory matters.

17 See recital 36b and Article 19(6) of the proposed SSM Regulation, <http://register.consilium.europa.eu/pdf/en/12/st17/st17812.en12.pdf>.

18 See Article 19(2ab) and 19(2b) of the proposed SSM Regulation. In the transition period, according to Article 27(6a) simple majority voting will be combined with qualified majority voting.

19 See recital 45a and Article 19 of the proposed SSM Regulation, <http://register.consilium.europa.eu/pdf/en/12/st17/st17812.en12.pdf>.

#### 4 THE BENEFITS OF THE SSM

The establishment of the SSM should provide short-term and medium to long-term benefits for financial stability and financial integration.

Focusing on the short-term benefits, the most prominent advantage expected from the SSM is the decoupling of the credit of the sovereign from that of financial institutions. Impartial and centralised supervision will make it possible for the ESM to directly recapitalise credit institutions, provided certain conditions are met.<sup>20</sup>

With respect to the medium to long-term benefits, the SSM constitutes a supervisory framework that with its solid enforcement powers marks a substantial leap forward from supervision conducted at a national level, with only supervisory coordination mechanisms in place. Furthermore, the SSM should enhance supervision and support the development and effective application of the single rulebook and the harmonisation of supervisory procedures and practices, creating a level playing field. These elements, coupled with the broad coverage of banks and the wider European perspective through the possible participation of non-euro area Member States, should contribute to restoring confidence in the banking environment. The improved confidence should also be conducive to a revival of the interbank and credit markets, which combined with the other two elements of the banking union, should be beneficial to fostering further financial integration.

Finally, the conferral of macro-prudential tasks to the ECB is an essential element of the new framework. As there is a reinforcing relationship between financial stability and financial integration, it is of the essence that the ECB should be able to address these risks in a comprehensive way and in close collaboration with national authorities.

#### 5 OTHER COMPONENTS TO COMPLETE THE BANKING UNION

Although the SSM constitutes a major step towards a more integrated financial framework, in order for it to work properly it is essential that a single resolution mechanism is created. In this context, an agreement by mid-June 2013 on the Bank Recovery and Resolution Directive would be the necessary next step.<sup>21</sup> A common system of deposit protection, built on common EU standards, is needed to ensure depositor confidence and thus reduce the probability of a run on a bank that could affect their liquidity and solvency.<sup>22</sup> This element is intended for the longer term. A first step towards achieving a common system would be the rapid adoption of the revised Deposit Guarantee Scheme Directive.

While the Bank Recovery and Resolution Directive will be an important and necessary step, it will not be enough on its own. As also recognised in a statement of the European Council in December 2012, a single resolution mechanism (SRM) is required once bank supervision is effectively moved to the SSM.<sup>23</sup> An SRM with a single resolution authority (SRA) at its centre is a necessary complement to the SSM, enabling the latter to call for intervention of an EU authority

20 See the conclusions of the European Council of 18/19 October 2012: “*The Eurogroup will draw up the exact operational criteria that will guide direct bank recapitalisations by the European Stability Mechanism (ESM), in full respect of the 29 June 2012 euro area Summit statement. It is imperative to break the vicious circle between banks and sovereigns. When an effective single supervisory mechanism is established, involving the ECB, for banks in the euro area the ESM could, following a regular decision, have the possibility to recapitalise banks directly*”, available at [http://www.consilium.europa.eu/uedocs/cms\\_data/docs/pressdata/en/ec/133004.pdf](http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/133004.pdf).

21 Council conclusions 14 December 2012, [http://www.consilium.europa.eu/uedocs/cms\\_data/docs/pressdata/en/ec/134353.pdf](http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/134353.pdf).

22 As an urgent first step, the Deposit Guarantee Scheme Directive should be adopted; see conclusions of the European Council of 13/14 December 2012 on completing EMU, point 8, urging adoption before June 2013.

23 See conclusions of the European Council of 13/14 December 2012 on completing EMU, point 11.

specifically entrusted to resolve failing banks in an orderly fashion, so that their problems do not cascade to other banks, affecting European financial stability. An SRA is essential to achieve an effective bank resolution regime in the euro area, as it will provide timely and impartial decision-making focused on the European dimension, and minimise resolution costs with minimum or no recourse to taxpayers' money.

Thus the SRA will ensure that failing banks are resolved swiftly, thereby reducing or even eliminating the pressure to keep the entities artificially alive through liquidity assistance. The SRA would thus constitute a strong counterpart to the SSM: the SSM should provide a timely and unbiased assessment of the need for resolution, while the SRA should ensure timely and efficient resolution once the trigger point is reached. Moreover, the SRA would ensure that losses and financing needs occurring in resolution are borne, first and foremost, by the shareholders and creditors of the institution in resolution, and that additional financing needs are covered by the community of banks under the SRM, contributing to a European resolution fund (ERF). The contributions to the ERF should consist of ex-ante, risk-based levies on the financial sector, with the possibility to impose special ex-post contributions. Public backstop arrangements for the ERF should thus be fiscally neutral over the medium term, given that they will be recouped via ex-post levies on the financial sector. Conversely, leaving resolution decisions and financing fully in the hands of national authorities could be vulnerable to possible failure of cooperation among national authorities, as they may face skewed incentives. A system which combines European supervision and national resolution is not incentive-compatible, so both supervision and resolution have to be set at the same level.<sup>24</sup>

Ahead of assuming the responsibility for the supervision of banks, the ECB in cooperation with national supervisory authorities will need to carry out a comprehensive assessment of their balance-sheets. This comprehensive review of banks' balance sheets is instrumental in identifying potential legacy problems. It has to be ensured that in the setting-up of a European Resolution Mechanism, the use of any European funds do not raise issues of moral hazard and/or unjustified mutualisation of losses stemming from the past.

## 6 CHALLENGES AHEAD – ESTABLISHING THE SSM

On the basis of the SSM Regulation, the ECB should assume its supervisory tasks 12 months after the entry into force of the legislation. A main priority for the ECB during 2013 is ensuring the operationalisation of the SSM, so that it can assume its responsibilities effectively and efficiently. In this context, several aspects warrant particular attention.

The preparatory work needed, consists of fact-finding with national supervisors on a variety of issues, including analysing supervisory practices and developing the framework for the data required for the operation of the SSM. It also consists of planning matters related to support from existing ECB functions for the operation of the SSM, including the administrative and logistical infrastructure needed for the establishment of the SSM. In this context, a key aspect upon which the success of the SSM will hinge is staffing requirements. It is therefore essential that the ECB recruits skilled and knowledgeable staff, including banking supervisors, to complement its current expertise in this area.

24 Schoenmaker, D. (2012), "Banking union: Where we're going wrong", VoxEU.org, October 2012.

A major task will be the development of the practical modalities concerning the envisaged differentiated approach as regards the conduct of supervision. The ECB will have to adopt and make public the organisational framework for cooperation within the SSM.

Finally, a supervisory framework risk assessment model will need to be developed in order to ensure that identified risks are assessed in a uniform manner within the SSM.

The SSM is envisaged to become effective 12 months after the entry into force of the proposed SSM Regulation.



## CHAPTER III

### EUROSYSTEM ACTIVITIES FOR FINANCIAL INTEGRATION

*The Eurosystem distinguishes between four types of activity through which it contributes to the enhancement of financial integration: (i) advising on the legislative and regulatory framework for the financial system and direct rule-making; (ii) acting as a catalyst for private sector activities by facilitating collective action; (iii) enhancing knowledge, raising awareness and monitoring the state of European financial integration; and (iv) providing central bank services that also foster European financial integration. The following sections provide an overview of the Eurosystem's contributions in these areas, focusing on the initiatives pursued during 2012.*

#### I THE LEGISLATIVE AND REGULATORY FRAMEWORK FOR THE FINANCIAL SYSTEM

While the Eurosystem considers financial integration to be first and foremost a market-driven process, the legislative and regulatory framework for the financial system clearly plays an important facilitating role. A harmonised EU legislative and regulatory framework removes national barriers to financial integration, supports cross-border access and competition and fosters cross-border financial transactions.

Against this background and in line with their advisory and regulatory functions,<sup>1</sup> the ECB and the Eurosystem monitor and actively contribute to the development of the EU legislative and regulatory framework.

More specifically, the ECB and the Eurosystem provide input for strategic policy deliberations, such as on the overall EU financial services policy or on the further development of the EU framework for financial regulation and supervision. Examples of such input are the publication of Eurosystem position papers on the websites of the ECB and NCBs and informal discussions with the regulatory and supervisory committees. Furthermore, the ECB and the Eurosystem provide both formal opinions and informal input for EU and national legislation in the area of financial services. The ECB may also contribute to ex post evaluation of regulatory measures.

#### EU SUPERVISORY AND REGULATORY ARRANGEMENTS

The European Council at the meeting of 28/29 June 2012 agreed on the need to foster economic integration in Europe, in accordance with the route indicated in the Report “Towards a Genuine Economic and Monetary Union”, prepared by the President of the European Council, the President of the European Commission, the Chair of the Eurogroup and the President of the European Central Bank. The Report sets out four essential building blocks to reinforce Economic and Monetary Union (EMU) with a view to countering and preventing sovereign debt crises: an integrated financial framework, an integrated budgetary framework and an integrated economic policy framework underpinned by strengthened democratic legitimacy and accountability.<sup>2</sup> As proposed by the European Commission in September 2012, the banking union will involve a single supervisory mechanism (SSM), a single recovery and resolution framework in the euro area and a harmonised

1 According to the Treaty and the Protocol on the Statute of the European System of Central Banks and of the European Central Bank, the ECB must be consulted, within its fields of competence, on any proposed Union act or any draft legislative provision proposed by national authorities. Such proposed Union acts include implementing and delegated acts adopted by the Commission on the basis of Articles 290 and 291 of the Treaty, including where they endorse technical standards developed by the European Supervisory Authorities in accordance with relevant Union legislation. Furthermore, the ECB has the right to issue regulations in certain areas, for example in the field of payment systems and statistics.

2 See also the European Council press release on the report by the President of the European Council Herman Van Rompuy “Towards a genuine Economic and Monetary Union”, dated 26 June 2012, available at the Council website at [www.consilium.europa.eu](http://www.consilium.europa.eu).

framework for the operation of the deposit protection schemes. As part of the proposed SSM, supervisory tasks and responsibilities will be assigned to the ECB. The specificities of the SSM are described in more detail in Chapter II.

As regards capital requirements of credit institutions and investment firms, the ECB participates in the Basel Committee on Banking Supervision and is closely following the work carried out regarding the Basel III framework. The ECB supports the European Commission's proposals for a **Directive on the access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms (the Capital Requirements Directive – CRDIV)** and for a **Regulation on prudential requirements for credit institutions and investment firms (the Capital Requirements Regulation – CRR)**, transposing the Basel III framework into European law. In its opinion<sup>3</sup> the ECB welcomed the Commission's approach which establishes a framework of maximum harmonisation with embedded flexibility for competent authorities to apply stricter requirements for macro-prudential reasons.

These developments, contributing to the creation of a single rulebook in the financial sector, will create a level playing field conducive to mitigation of regulatory arbitrage and increased financial integration. Such an approach is supportive of an effective performance of supervisory tasks by the SSM, and was highlighted by the European Council in its conclusions of 18 October 2012.<sup>4</sup>

As regards crisis management, on 6 June 2012 the European Commission submitted a proposal for **Directive on bank recovery and resolution of credit institutions and investment firms (BRRD)**, setting out a framework with specific powers and tools for national resolution authorities. The proposed directive is aimed at ensuring that banks and investment firms across the EU that are failing or about to fail can be resolved in an orderly way, with a view to avoiding instability in financial markets and minimising the cost to taxpayers. The proposed framework distinguishes between three different phases in the management of a bank crisis, each requiring different intervention powers and tools of intervention: (a) "preparation", where recovery and resolution plans have to be submitted and preventative measures may be adopted; (b) "early intervention", including the adoption of measures such as the appointment of a special manager; and (c) "resolution", involving a "toolkit" of measures, including the sale of a business, the setting up of a bridge institution, asset separation and bail-in. In all these phases, cooperation among national authorities is strongly supported in particular as regards cross-border groups, where a prominent role is given to the authority responsible for the group level resolution. Funding of resolution will occur at the national level, with Member States being required to put in place national financing arrangements, including the possibility of cross-border borrowing. In its opinion<sup>5</sup>, the ECB welcomed the proposed BRRD, fully supporting the development of a recovery and resolution framework and the removal of obstacles to effective crisis management of financial institutions. By harmonising main tools for bank recovery and resolution, the directive will provide a clear contribution to financial integration. The Directive is expected to be transposed into national law by 31 December 2014 and national provisions, with the exception of the bail-in, are envisaged to enter into force on 1 January 2015. National provisions relating to the bail-in are expected to enter into force by 1 January 2018 at the latest.

3 See ECB Opinion CON/2012/5 of 25 January 2012 on a proposal for a directive on the access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms and a proposal for a Regulation on prudential requirements for credit institutions and investment firms, OJ C 105, 11.4.2012, p. 1.

4 See European Council conclusion of 18 October 2012, available at the Council website.

5 See ECB Opinion CON/2012/99 of 19 November 2012 on a proposal for a directive establishing a framework for recovery and resolution of credit institutions and investment firms OJ C 39, 12.2.2013, p. 1.

## EU LEGAL FRAMEWORK FOR RETAIL PAYMENTS

Owing to rather unsatisfactory migration progress towards the **Single Euro Payments Area (SEPA)**, the Eurosystem already drew attention to the need for an end date for migration to SEPA in its 6th SEPA Progress Report in 2008.

On 31 March 2012, an EU Regulation establishing technical and business requirements for credit transfers and direct debits in euro (the SEPA migration end-date Regulation)<sup>6</sup> entered into force. The SEPA migration end-date Regulation lays down rules for the initiation and processing of credit transfer and direct debit transactions denominated in euro within the European Union. It also defines a clear timeline by when these rules need to be implemented. For the euro area, the final deadline is 1 February 2014. The deadline for euro-denominated payments in non-euro area EU countries will be 31 October 2016. By these dates, existing national euro credit transfer and direct debit schemes must be phased out and replaced by the SEPA-compliant alternatives. In its opinion<sup>7</sup>, the ECB welcomed and supported the imposition of end-dates for migration to the SEPA of credit transfers and direct debits by means of a Union regulation.

In March 2012, the Eurosystem provided a response to the European Commission's Green Paper "Towards an integrated European market for card, internet and mobile payments". This Green Paper is one of the inputs for the review, planned for 2013, of the Payment Services Directive.<sup>8</sup>

## EU LEGAL FRAMEWORK FOR SECURITIES SERVICES

The current legislative projects in the EU share the objective of developing an appropriate regulatory framework for clearing and settlement, securities acquisition, holding and disposition, and close-out netting in order to improve the integration of the EU framework and to foster safety and efficiency.

On 7 March 2012 the European Commission issued a proposal for a regulation "on improving securities settlement in the European Union and on central securities depositories (CSDs)". The future **Central Securities Depository Regulation (CSDR)** will establish an EU framework for authorisation, supervision, cross-border service provision and outsourcing, as well as prudential and organisational requirements for CSDs. It will have a major impact on the EU legal framework for financial market infrastructures. The ECB strongly supports the Commission's proposal to strengthen the legal framework applicable to CSDs, also in the context of the future TARGET2-Securities (T2S) environment. In its opinion,<sup>9</sup> the ECB recommended an adequate involvement of the members of the European System of Central Banks (ESCB) in view of their statutory competence as overseers and central banks of issue. Whilst the proposal recognises the need for cooperation with the ESCB in the definition of regulatory technical standards for CSDs, there should, similarly and in line with international principles, also be comprehensive cooperation regarding decisions to grant or withdraw authorisations of CSDs and in the on-going risk assessment of CSDs. In addition, the regulation should follow the recently issued CPSS-IOSCO principles for financial market

6 See Regulation (EU) No 260/2012 of the European Parliament and of the Council of 14 March 2012 establishing technical and business requirements for credit transfers and direct debits in euro and amending Regulation (EC) No 924/2009, OJ L 92, 30.03.2012, pp. 22-37.

7 See ECB Opinion CON/2011/32 of 7 April 2011 on a proposal for a Regulation establishing technical requirements for credit transfers and direct debits in euro, OJ C 155, 25.5.2011, p. 1.

8 See Directive 2007/64/EC of the European Parliament and of the Council of 13 November 2007 on payment services in the internal market amending Directives 97/7/EC, 2002/65/EC, 2005/60/EC and 2006/48/EC and repealing Directive 97/5/EC, OJ L 319, 5.12.2007, p. 1-36.

9 See ECB Opinion CON/2012/62 of 1 August 2012 on a proposal for a regulation on improving securities settlement in the European Union and on central securities depositories, OJ C 310, 13.10.2012, p. 12-31.



infrastructures (PFMIs)<sup>10</sup> that replace earlier CPSS-IOSCO guidance for securities settlement systems.<sup>11</sup> Close alignment of EU rules with international standards may ensure global consistency and avoid putting EU CSDs at a competitive disadvantage.

The ECB supports a timely adoption of the CSDR and of the related technical standards before the go-live of the T2S platform in 2015, as this would facilitate the CSDs' connection to T2S from a legal and regulatory perspective and increase legal soundness in cross-border transactions, while fostering harmonisation and improving the CSDs' competitive environment. The importance of the CSDR for a European level playing field as well as for T2S was also recognised by the Council of the European Union in the conclusions of its 11 May 2012 meeting.

Finally, legislative initiatives in the area of fund management in 2012 included the publication of regulatory technical standards complementing the **Alternative Investment Funds Management Directive (AIFMD)** as well as the proposal for a **UCITS V Directive** reforming the remuneration rules for UCITS operators and rules concerning UCITS depositaries. In its opinions,<sup>12</sup> the ECB welcomed in particular the regulation of depositary functions for alternative investment funds and UCITS while proposing more stringent safeguards in this respect. In another opinion<sup>13</sup> the ECB also welcomed the initiative for improving the protection of consumer of financial products through the proposed **Regulation on key information documents for financial products**.<sup>14</sup>

#### EU LEGAL FRAMEWORK FOR OTC DERIVATIVES, CENTRAL COUNTERPARTIES AND TRADE REPOSITORIES

One of the main legislative initiatives in the EU during 2012 concerned the **Regulation on OTC derivatives, central counterparties and trade repositories (also referred to as the European Market Infrastructure Regulation EMIR)**.<sup>15</sup> The EMIR, which entered into force in August 2012, introduced for the first time common EU rules for central counterparties (CCPs) and trade repositories (TRs) and will implement the G20 commitments to mandatory central clearing and reporting of OTC derivatives. On 26 September 2012, the European Banking Authority (EBA) published draft regulatory technical standards on capital requirements for CCPs and on 27 September 2012 the European Securities and Markets Authority (ESMA) published the sets of draft regulatory and implementing technical standards in respect of certain aspects of OTC derivatives and on requirements for CCPs and TRs. Except for the technical standards for CCP colleges, which will be adopted at a later stage, all proposed standards were endorsed by the European Commission on 19 December 2012. Following the subsequent confirmation of non-objection by the European Parliament and the Council, the standards were published on 23 February in the Official Journal and entered into force on 15 March 2013. The ECB considers the adoption of the EMIR and the work of ESMA and the EBA on the technical standards a major achievement in ensuring the effective

10 See CPSS-IOSCO, "Principles for financial market infrastructures of April 2012, available on the website of the Bank for International Settlements (BIS) (<http://www.bis.org>).

11 See CPSS-IOSCO, "Recommendations for securities settlement systems" November 2001, available on the BIS website (<http://www.bis.org>).

12 See ECB Opinion CON/2012/42 of 24 May 2012 on a draft Commission delegated regulation supplementing Directive 2011/61/EU of the European Parliament and of the Council with regard to exemptions, general operating conditions, depositaries, leverage, transparency and supervision, OJ C 47, 19.2.2013, p.1 and ECB Opinion CON/2012/4 of 11 January 2013 on a proposal for a directive of the European Parliament and of the Council amending Directive 2009/65/EC on the coordination of laws, regulations and administrative provisions relating to undertakings for collective investment in transferable securities (UCITS) as regards depositary functions, remuneration policies and sanctions.

13 See ECB Opinion CON/2012/103 of 11 December 2012, on a proposal for a regulation on key information documents for financial products.

14 See proposal for a regulation of the European Parliament and of the Council on key information documents for investment products, COM (2012) 350 final.

15 See Regulation (EU) No 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivatives, central counterparties and trade repositories, OJ L 201, 27.7.2012, p. 1.

implementation of the global commitments for OTC derivatives market reform. The ECB has directly contributed to the preparation of the standards inter alia by participating in the preparatory task forces and by issuing a related ECB opinion.<sup>16</sup> The ECB welcomes the significant efforts that have been made to align the requirements for CCPs and TRs with the CPSS-IOSCO PFMI in order to ensure consistency and to pre-empt potential regulatory arbitrage. Furthermore, as far as CCPs are concerned, under the EMIR, the Eurosystem will participate as central bank of issue for the euro in colleges of authorities for EU CCPs with significant euro-denominated business. The ECB expects that appropriate cooperative relations between supervisors and central banks will also be established for TRs and that existing arrangements, such as the cooperative oversight arrangement for the DTCC Derivatives Repository Limited (DDRL), will be continued once ESMA takes over supervisory responsibilities.

#### DEVELOPMENT OF AN INTERNATIONAL REFERENCE DATA UTILITY

A Reference Data Utility, of which the Legal Entity Identifier (LEI) is the first component, will contribute to the integration of European financial markets by providing a standardised data language, which will enable fast and effective exchange, integration, aggregation and analysis of very large data volumes collected from many sources across the financial system. This will fulfil one of the necessary conditions for technically sound, EU-wide implementation of many regulatory measures and supervisory functions and facilitate higher integration of operational processes and improvement in operational risk management across the European financial sector and beyond.

Work has now reached a new stage with the endorsement of the Charter of the Regulatory Oversight Committee (ROC) by the G20 Finance Ministers and Central Bank Governors at their meeting on 4-5 November 2012 in Mexico and the impending creation of the ROC.

Following the mandate received from the G20 Summit of 4 November 2011 in Cannes, recommendations were developed in an FSB Expert Group and submitted to the G20 Summit on 18-19 June 2012 in Los Cabos, which mandated the FSB to progress towards implementation. This was done in a 55-strong worldwide FSB LEI Implementation Group (IG) and resulted in the Charter, among other things. An ECB representative was appointed as one of the three Vice-Chairs of the IG (one for the Americas, one for Europe, one for Asia). The IG is supported by a 320-strong, voluntary private sector preparatory group.

The Charter is now open for signing by market authorities worldwide. The first round of signatures, which closed on 10 January 2013, saw 45 authorities accede to the Charter as members of the ROC and another 15 as observers, whereby a quorum was reached for establishing the ROC at the meeting on 24-25 January 2013. The ROC will be the highest authority of the LEI system and will be established once twelve authorities representing all four of the identified regions and at least two countries per region have signed. In order to keep the work of the ROC manageable after many institutions have signed up, it will be equipped with an Executive Committee of 23 members, with the ECB being proposed as a permanent member for Europe. Five seats will be allocated to each of the four regions, three seats reserved for global institutions such as the IMF. The EU is in the Europe Region, which also includes the Commonwealth of Independent States (CIS).

<sup>16</sup> See ECB Opinion CON/2012/95 of 27 November 2012 on various draft regulatory and implementing technical standards submitted by the European Securities and Markets Authority to the Commission to be adopted by means of Commission delegated and implementing regulations supplementing Regulation (EU) No 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivatives, central counterparties and trade repositories.

The ROC will, as soon as possible, establish the Central Operating Unit (COU), a non-profit start-up that will manage the system and its growth to global and universal coverage. That work will begin by creating a foundation and by appointing a private sector Board of Directors, which will in turn establish the operations. The COU will contract Local Operating Units (LOUs), public or private, to run local registration and data validation and maintenance services. In its steady state, the system will be financed through registration fees and annual maintenance fees levied on the entities registered.

The COU will also advise legislators and regulators on the design of laws and rules to render the LEI registration compulsory, and it will sponsor necessary research in its field of activity. The private sector has constantly advocated legal compulsion to ensure the quality of the LEI coverage and data, which it needs for improving the efficiency of its own operations and its risk management.

Meanwhile, the European Parliament's Committee on Economic and Monetary Affairs expressly welcomed the LEI in its Report on Shadow Banking (2012/2115(INI)) of 25 October 2012, and called for its expansion to also cover financial instruments and contracts and calls for common reporting standards which is in line with the philosophy of the Reference Data Utility as originally described.<sup>17</sup> The LEI system would be well suited for such expansion once its governance and organisation are sufficiently stable in its first mission.

## 2 CATALYST FOR PRIVATE SECTOR ACTIVITIES

While public authorities have the responsibility of providing an adequate framework, conducive to financial integration, progress in European financial integration ultimately depends on private sector initiatives making full use of cross-border business opportunities. Competition among market players is a major driving force in this regard. In addition, progress made in the field of financial integration also depends on effective collective action, notably where heterogeneous market practices and standards need to be overcome. However, possible coordination problems may hamper such cooperative approaches among market participants. In such cases, public sector support for private sector coordination efforts may help to overcome possible difficulties.

Given its institutional characteristics, the Eurosystem is particularly well placed to play an active role as a catalyst for private sector activities in the field of European financial integration. The ECB is both a public authority with a pan-European remit and, in its capacity as the central bank of the euro area, an active market participant, with knowledge of and business contacts in the financial markets. Over the past few years, the ECB has acted as a catalyst in many fields.

In 2012 the catalytic activities of the ECB and the Eurosystem focused mainly on the following initiatives.

<sup>17</sup> The European Parliament's Committee: (i) welcomed the development of a Legal Entity Identifier (LEI), and believes that, building on its usefulness, similar common standards should be developed in relation to repo and securities reporting, to cover principal, interest rate, collateral, haircuts, tenor, counterparties and other aspects which help the formation of aggregates; (ii) underlined that in order to have a joined-up global approach for regulators to analyse data and for them to be able to share this with one another in order to take action where necessary to prevent build-up of systemic risk and protect financial stability, it is essential to have common reporting formats based on open industry standards.

## STRUCTURED FINANCE MARKETS

In order to reactivate the structured finance markets in Europe, the Eurosystem acted as a catalyst by supporting market-led initiatives to promote the reactivation of these market segments and create viable structures that would also attract institutional investors with a medium to long-term investment horizon. In this respect, and in order to increase transparency in the area of asset-backed securities (ABSs), the Governing Council of the ECB decided in December 2010 to establish loan-by-loan information requirements for ABSs in the Eurosystem collateral framework. Since then, preparatory work has been concluded, and a market-led single loan level data repository, the European Data warehouse, has been created in order to handle the loan-level data. In November 2012, the Governing Council announced that loan-level data reporting will be mandatory for residential mortgage-backed securities and for ABSs whose underlying assets include loans to small and medium-sized enterprises as of 3 January 2013; for commercial mortgage-backed securities as of 1 March 2013; and for consumer finance ABSs, leasing ABSs and auto loan ABSs of 1 January 2014. Loan-level data are to be provided in accordance with the templates available on the ECB's website, at least on a quarterly basis. In addition, the ECB has acted as an observer and catalyst in two other market-led initiatives in securitisation markets. The first initiative is aimed at reinforcing ABSs as sustainable investment and funding tools, in particular with a view to improving market resilience in Europe. It is promoted by the Association for Financial Markets in Europe (AFME) and the European Financial Services Round Table (EFR). This initiative, which is called the Prime Collateralised Securities (PCS) initiative, rests on EU-wide standards for ABSs which relate to quality, transparency, standardisation and simplicity. These standards are expected to lead to increased liquidity for securities which acquire the PCS label. The work was finalised during 2012 and the first asset was PCS labelled in November 2012.

The second initiative is promoted by the European Covered Bond Council (ECBC). It is aimed at establishing a "Covered Bond" label, which will be granted to covered bond programmes which meet specific criteria, such as increased transparency, strong safeguards provided by dedicated national covered bond legislation, the supervision of both the issuing credit institution and the cover pool, and compliance with the requirements of Article 52(4) of the UCITS Directive. This initiative was also concluded during 2012, and the first covered bond that complied with the label was introduced in January 2013. The ECB acts as an observer in advisory groups for the PCS initiative and for the Covered Bond label, in the same way as it acts as an observer in the STEP Market Committee.

Standardisation and enhanced transparency, which would in particular ensure access for investors to comprehensive and standardised information across the European ABS market, are expected to foster a properly functioning securitisation market. This will in turn contribute to the completeness of the European financial system and to fostering integration through the improved comparability of instruments across borders.

## RETAIL PAYMENTS INITIATIVES

The Eurosystem, together with the European Commission, continued to monitor and support work on SEPA, with a view to integrating the market for euro retail payment services, with no distinction between cross-border and national payments.

Special attention has been paid to the migration to the new SEPA instruments. According to the SEPA indicators, migration to SEPA credit transfers in the euro area reached 34.9% in December 2012, whereas for SEPA direct debits migration amounted to only 1.9% (see Chart 26 in Chapter I). Legal measures to support migration to the SEPA schemes have been promoted by the Eurosystem since 2008; the adoption of the SEPA migration end-date Regulation in March 2012 was therefore highly welcome (see Section 1).

Beyond credit transfers and direct debits, further work is clearly needed for a SEPA for cards. In 2012 the Eurosystem began analysing the merits of a *SEPA Cards Processing Framework* which would connect card processors to more efficiently process card transactions across borders.

In this context, the Eurosystem is adapting the payments statistics to the new environment created by SEPA. With a view to minimising the reporting burden while showing the relevant new developments in the SEPA context, a ‘merits and costs procedure’ has been run that will eventually allow adopting an ECB regulation supporting the collection of harmonised data from 2014 onwards.

In July 2012 the Eurosystem organised a third meeting of the Forum on the SEPA Certification Framework. The Eurosystem expressed its support for continued joint efforts of card schemes, certification authorities, evaluation laboratories, terminal manufacturers and the banking industry to develop a thorough methodology for the security evaluation and certification of new payment terminals, which would establish a single type-approval process for terminals, allowing deployment within the EU based on a single evaluation and certification. These and other elements of information security and fraud prevention in retail payments remain at the constant focus of attention for the Eurosystem.

The European forum on the security of retail payments (SecuRe Pay), a voluntary cooperation between relevant authorities within the EEA dealing with the issue of security in retail payments, addresses areas where major weaknesses and vulnerabilities are detected and, where necessary, makes recommendations. In 2012 the focus of the forum was on the security of internet payments. After a public consultation final recommendations were published in January 2013. The forum also analysed the risks of account information and payment initiation services, in which internet-enabled payment accounts are accessed by a third party. A public consultation on draft recommendations in this area was launched in January 2013. Finally, it also started work on the security of mobile payments (m-payments).

The full migration to the SEPA credit transfer and direct debit schemes and the realisation of an integrated and competitive cards market based on common business practices, technical standards and security requirements form the foundation for innovative payment services offered on a pan-European scale. However, in the field of internet payments the rollout and usage of this innovative way of making payments has not kept pace with the rapid development of e-commerce.

In the context of innovation, smaller pilots for m-payments have been organised in several European countries, sometimes followed by actual deployments. The Eurosystem is concerned that too little attention is being paid to technical standardisation and business interoperability, which are key factors of success, thus possibly recreating for m-payments technical, legal and market barriers similar to the ones which SEPA has been trying to solve with regard to cross-border retail payments.

At the global level the ECB contributed to work of the Committee on Payment and Settlement Systems (CPSS) in drawing up a report on “Innovations in retail payments”, published in May 2012.

In 2012, the SEPA Council<sup>18</sup> held in-depth discussions regarding the review of SEPA governance, i.e. the way in which the SEPA project is being managed. At the core of these discussions is the future role of the SEPA Council itself in shaping the future of retail payment services in euro. Moreover, it discussed several issues related to SEPA migration and the end-date regulation, SEPA for cards, and innovation. Regarding the latter, in view of the limited progress achieved by the market so far, it identified key challenges to be examined in order to ensure the provision of EU-wide e-payment services for e-commerce.

Moreover, in September 2012, the ECB published its study into the social and private costs of making retail payments, which was conducted in cooperation with 13 NCBs and involved, inter alia, a survey conducted at national level.<sup>19</sup> These costs amount to almost 1% of the GDP of the 13 countries concerned. If extrapolated to cover all 27 EU countries, the costs would be around €130 billion. The results underline how much retail payment services matter for European society and for the economy as a whole and provides insights into how overall cost efficiency in retail payments could be further improved.

### INTEGRATION OF SECURITIES INFRASTRUCTURES

Although the European post-trading market infrastructure for securities transactions is evolving, it is still fragmented and has not yet reached a level of efficiency, integration and soundness compatible with the requirements of the Single Market and the single currency.

The Eurosystem therefore has a strong interest in fostering further integration in this area. The Eurosystem’s most fundamental contribution to the integration of securities infrastructures is through the building of T2S, a single platform for securities settlement in Europe. T2S will make financial markets safer and more efficient, and it will increase transparency in the post-trade environment. More details on how the services offered by T2S will foster financial integration in Europe are provided in Section 4.

T2S also acts as a catalyst for further harmonisation of rules and market practices followed by EU securities infrastructures, where there are a number of significant barriers to cross-border integration of securities infrastructures, as identified in the Giovannini Report (2003).<sup>20</sup>

The launch of T2S in 2015 will be the key catalyst for the private sector’s adaptation to a new post-trade framework in the EU. The progress in this adaptation is reflected in a number of developments which are either triggered or fostered by the mere introduction of T2S: among others, the adoption of ISO 20022 settlement instruction messages, the introduction of night time securities settlement in central bank money, the progress achieved in establishing and monitoring market standards for

<sup>18</sup> The SEPA Council is a stakeholders’ forum, co-chaired by the ECB and the European Commission, which aims to promote an integrated euro retail payments market by ensuring the proper involvement of all parties and by fostering consensus on the next steps towards the realisation of SEPA. The payments industry, public administrations and end-users (such as consumers and corporate entities, like small and medium-sized enterprises and retailers) are represented. Four Eurosystem national central banks also participate on a rotating basis.

<sup>19</sup> For more details, see Schmiedel, H., Kostova, G. and Ruttenberg, W., “The social and private costs of retail payment instruments: a European perspective”, *Occasional Paper Series*, No 137, ECB, September 2012.

<sup>20</sup> See Giovannini Group, “Second Report on EU Clearing and Settlement Arrangements”, April 2003, available on the European Commission website (<http://ec.europa.eu>).

managing corporate actions, the harmonisation of settlement finality rules (beyond the Settlement Finality Directive's generic provisions), the improvement of market access to securities settlement (provision of omnibus accounts by issuer CSDs) and the harmonisation of securities static data (i.e. face amount for debt instruments and units for equities).

In addition, the prospect of connected EU securities infrastructures via T2S has prompted market participants to further work on influencing the regulatory initiatives which support financial integration. A typical example is the work on the harmonisation of settlement cycles (i.e. the T+2 initiative) and the introduction of a settlement discipline regime in the EU. These private sector initiatives will be taken over by the CSD regulation and the ESMA technical standards.

Finally, the new joint (private and public sector) initiative on post-trade harmonisation, the European Post Trade Group (EPTG) is based on the current EU regulation on securities market infrastructures and the introduction of T2S in 2015. The T2S Team at the ECB is participating in the secretariat of the new group, which is a successor to the European Commission's Clearing and Settlement Advisory and Monitoring Expert Group (CESAME) and Expert Group on Market Infrastructures (EGMI). The EPTG is focusing its attention on post-trade harmonisation items which are currently not covered by public authority initiatives (T2S, the Contact Group on Euro Securities Infrastructures (COGESI) and the CSDR). These items include, among others, the work on cross-border shareholder transparency and pre-settlement procedures (e.g. trade confirmation, allocation and time of matching).

### 3 KNOWLEDGE OF THE STATE OF FINANCIAL INTEGRATION

The ECB is in a unique position to provide in-depth economic analysis and comprehensive statistics regarding the state of financial integration in the euro area and its development. Furthermore, the ECB is able to sponsor coordinated analytical research – together with other members of the Eurosystem and academics – and can make use of its experience and knowledge as an active market participant. Enhancing knowledge and raising awareness regarding the need for European financial integration, and measuring the progress achieved in this regard, therefore form a major part of the ECB's contribution to fostering financial integration.

During 2012 the activities of the Eurosystem with respect to enhancing knowledge, raising awareness and monitoring the state of financial integration were mainly focused on the following initiatives.

#### INDICATORS OF FINANCIAL INTEGRATION IN THE EURO AREA

Quantitative measures of financial integration provide essential tools for monitoring the status of financial integration in Europe and the progress achieved. Since September 2005, the ECB has published statistical indicators of integration in the euro area financial markets.<sup>21</sup> These price and quantity-based indicators cover the money market, the government and corporate bond markets, the equity market and the banking sector. Indicators on market infrastructures have been allocated to the main financial markets that they serve. The report also presents indicators of financial development. In fact, while financial integration is an important factor in increasing the efficiency of a financial system, the latter also depends on each financial system's own degree of development.

<sup>21</sup> See Chapter I, and see the ECB reports entitled "Indicators of financial integration in the euro area", September 2005 and September 2006, available on the ECB's website.

Since the publication of the 2012 issue of the report, a thorough review of the set of indicators has been carried out. The aim of the review was two-fold.

First, the review of the relevant recent research on financial integration gave guidance on whether the indicators used in the report still accurately reflected the market situation and whether new indicators should have been developed and added. As a result, some of the existing indicators were removed from the report, while new ones were inserted. The review also encompassed a clearer separation of indicators showing market developments and market integration.

The second aim of the review was to make the indicators more granular, by further breaking down the information through country groupings. Many indicators are now presented for all the euro area countries together and then split between countries with the highest and with the lowest and intermediate rates of long-term sovereign interest rates for bonds with a remaining maturity of approximately ten years.

The indicators are updated and published semi-annually on the ECB's website. The last update was carried out in November 2012 and the next one will take place in May 2013.

#### ECB AND EUROPEAN COMMISSION JOINT CONFERENCE ON FINANCIAL INTEGRATION AND STABILITY

Under the heading "Financial integration and stability: towards a more resilient single EU financial market", the ECB organised a joint high-level conference with the European Commission on financial integration and stability with the participation of the President and Vice-President of the ECB and other top-level financial market participants, policy-makers and academics on 26 April 2012. In addition to discussing the implications of the financial crisis for the integration and stability of European and international financial markets, the ECB presented its 2012 report on Financial Integration in Europe and the Commission presented its European Financial Stability and Integration Report 2011.

This conference was the third conference held jointly by the ECB and the European Commission on financial integration and financial stability issues. The conference is an annual event, with the venue alternating between the ECB and the European Commission. The fourth conference will take place on 25 April 2013 at the premises of the European Commission in Brussels.

#### PROVISION OF FINANCIAL MARKETS STATISTICS

Increasing transparency fosters integration, as it facilitates the comparison of products across the economic area. Since July 2007 the ECB publishes nominal yield curves of AAA-rated euro-denominated euro area central government bonds with a residual maturity from three months to 30 years. The ECB publishes zero-coupon (spot, forward and par) yield curves for the euro area. Data based on the same sources and methodology used for the daily estimations stretch back to 6 September 2004.<sup>22</sup> In addition, the ECB releases daily yield curves covering all euro area central government bonds and publishes the spreads between both curves.

From an ECB monetary policy perspective, the main benefit of the euro area yield curve is that it provides a proper empirical representation of the term structure of euro area interest rates, which can be interpreted in terms of market expectations of monetary policy, economic activity and

22 The yield curves and a description of the methodology used to estimate them can be found on the ECB's website.



inflation. Publishing a consistent and comparable set of yield curves based on euro-denominated central government bonds also provides reference information for the wider public and financial market participants, who previously had to rely on references to bonds of individual issuers.

Since the introduction of the euro, and in particular due to the recent turmoil in financial markets, the demand both from the public and from institutions for timely and accurate statistical data on euro money market activity has increased. To this end, since the year 2000 the ECB has conducted an annual survey of euro money market activities during the second quarter of each year. For the 2012 survey, 172 banks in the EU and in Switzerland participated on a voluntary basis. The data include average daily turnover for a variety of market segments (the unsecured market, repo market, derivatives market and short-term securities market) and their respective maturity ranges (from overnight to more than ten years). The data are released to the general public as the “Euro Money Market Survey”. In addition, for each even-numbered year the “Euro Money Market Study” presents an in-depth analysis of money market activity.<sup>23</sup>

The ECB has the responsibility for the provision of statistics on the Short Term European Paper (STEP) market. Apart from daily yields and spreads on new issues, the ECB statistics include daily data on aggregated outstanding amounts and new issues broken down by sector, maturity, rating and currency. Outstanding amounts and currency breakdowns are also shown at the level of each individual issuance programme. This set of statistics enlarges information that helps backing investors’ decisions. For instance, it allows investors to assess their concentration risk, measuring their exposure to a specific programme as a share of the programme’s overall size.

## STATISTICS ON INSTITUTIONAL INVESTORS

In 2012 the ECB, together with the NCBs of the euro area and of most non-euro area Member States continued the production of an enhanced set of statistics on MFIs concerning balance sheet items and interest rate statistics as well as statistics on MFI securitisation and the balance sheets of financial vehicle corporations engaged in securitisation transactions.<sup>24</sup> Moreover, the ECB continued to publish harmonised statistics on assets and liabilities of investment funds. These consist of two separate datasets, one covering investment funds as part of the “other financial intermediaries” sector, and the other covering money market funds (MMFs) as part of the MFI sector.<sup>25</sup> Since 1 February 2012, the statistical definition of MMFs, used in data collection for monetary statistics, has been aligned with the supervisory definition as adopted by the Committee of European Securities Regulators (the predecessor to ESMA). The motivation behind the adoption and implementation of an EU-wide definition was the desire to protect investors by setting out clear-cut quantitative and qualitative criteria to be applied to any fund marketing itself as a MMF.<sup>26</sup>

In addition to this, the ECB also regularly publishes euro area balance sheet statistics for credit institutions (which together with MMFs constitute almost the whole of the MFI sector excluding the Eurosystem).

23 The Euro Money Market Study and the Euro Money Market Survey are available on the ECB’s website. Statistical data can be retrieved from the Statistical Data Warehouse pages on the ECB’s website.

24 Financial vehicle corporations are securitisation vehicles as defined in Regulation (EC) No 24/2009 of the European Central Bank of 19 December 2008 concerning statistics on the assets and liabilities of financial vehicle corporations engaged in securitisation transactions (ECB/2008/30).

25 Collected under Regulation (EC) No 958/3007 of the European Central Bank concerning statistics on the assets and liabilities of investment funds (ECB/2007/8).

26 Such criteria are aimed at restricting the various types of risk associated with MMFs, i.e. interest rate, liquidity, credit and credit spread risks.

The analysis of bank lending channel and monetary policy transmission mechanism is a basic requirement for ECB policy making. As the financial crisis led to an increasing use of country-specific bank lending rates in the regular assessment of euro area economic conditions some discrepancies in the rates used have been challenging the accurate assessment of cost of lending developments across the euro area. For forecasting and monitoring purposes, the ECB is developing a set of standardised indicators to monitor the interest rates charged on loans to non-financial corporations and households focusing on four composite lending rates, namely short-term and long-term lending rates to non-financial corporations and to households for house purchase.

Furthermore, in 2012 the ECB continued the regular publication of quarterly statistics for insurance corporations and pension funds (ICPFs) in the euro area under a ‘short-term’ approach. The statistics, derived mainly from supervisory sources, contain information on assets and liabilities of ICPFs resident in the euro area, and, for the main aggregates, are also available separately for insurance corporations and for pension funds. In parallel to this, in 2012 the ECB started a “merits and costs procedure” aimed at a “steady-state” approach to harmonised statistics on the insurance sector. For this purpose, the ECB is cooperating closely with the European Insurance and Occupational Pensions Authority (EIOPA) on the integration of statistical and new Solvency II supervisory reporting requirements. Despite some delay in the adoption of the Omnibus II Directive for the implementation of Solvency II, including the related quantitative reporting templates, cooperation is continued towards a “phasing-in” approach. Subject to a positive outcome, the ECB intends to launch a regulation for statistical requirements on insurance undertakings using, to the extent possible, supervisory data sources as a way to minimise the reporting burden on insurance undertakings.

The regular production of these statistics contribute to a better, more harmonised measurement of activity in the financial sector as a whole, including that of non-bank financial corporations across the euro area countries, as well as in some other EU Member States. This ensures greater transparency and comparability in the assessment of developments in this sector and each sub-sector.

Work is now on-going to develop a security-by-security dataset on securities holdings of euro area/EU investors which will represent a further important improvement in data availability as from 2014.

In response to important gaps in statistics on credit risk transfer (CRT) instruments revealed by the current financial crisis, an important initiative is being taken to develop harmonised statistics on securities holdings and improvements have also been made to statistics on credit derivatives (principally CDSs), the latter compiled by the Bank for International Settlements (BIS), including the granularity of counterparty breakdowns by sector and region. The credit derivative statistics are based on the work of a Committee on the Global Financial System (CGFS)/BIS Working Group in which the ECB participated.<sup>27</sup>

#### 4 CENTRAL BANK SERVICES THAT FOSTER INTEGRATION

Financial market integration needs to be complemented and supported by the integration of the underlying market infrastructures. The provision of central bank services is another way in which the Eurosystem seeks to promote financial integration in this area. Although the main purpose of

<sup>27</sup> See “Credit risk transfer statistics”, *CGFS Papers*, No 35, CGFS, September 2009.

such services is the pursuit of the Eurosystem's basic central banking tasks, the Eurosystem pays close attention to ensuring that such services, where possible, are specified in such a way that they are also conducive to supporting the financial integration process.

During 2012 the ECB and the Eurosystem focused their activities in the area of central bank services on the following initiatives.

## TARGET2

TARGET2 plays an important role in the integration of euro large-value payments, including money market operations. TARGET2 is based on a single technical platform, also referred to as the single shared platform (SSP). The SSP is used for the processing of euro payments and the management of accounts opened for financial institutions with their central banks. The SSP also supports other systems operating in euro (i.e. ancillary systems), settling the cash positions of their participants in central bank money. With TARGET2 the entire European user community benefits from the same comprehensive, advanced real-time gross settlement services. TARGET2 offers broad access to credit institutions and ancillary systems. At present, 24 central banks of the EU and their respective national user communities use the single shared platform of TARGET2: the 17 euro area NCBs, the ECB, and 6 NCBs from non-euro area EU Member States.

With the creation of TARGET2 the Eurosystem made a crucial contribution to European financial integration. Being the first market infrastructure completely integrated and harmonised at the European level, TARGET2 has eliminated the fragmented situation that previously existed in the management of central bank liquidity and the real-time settlement of euro payments. The move to a single platform represented a significant step towards a more efficient, competitive, safe and fully integrated European payments landscape, offering all market participants equal conditions and services regardless of their location. The harmonised service level of TARGET2, offered with a single price structure, ensures a level playing -field for all participants across Europe.

TARGET2 also provides a harmonised set of cash settlement services in central bank money for all kinds of ancillary systems, such as retail payment systems, money market systems, clearing houses and securities settlement systems. In 2012, 82 ancillary systems were settling their balances in TARGET2. The main advantage for ancillary systems is that they are able to settle their cash positions in TARGET2 via a standardised technical interface and standardised settlement procedures, thus allowing a substantial harmonisation of business practices.

The TARGET2 system functioned smoothly in 2012. The system's market share remained stable, with 92% of the total value and 58% of the total number of euro denominated large-value payments being executed via TARGET2. The average number of payments processed by the system each day in 2012 was 354,185, while the average daily value was €2,477 billion. These figures position TARGET2 as one of the most important systems for large-value and time-critical payments in the world, alongside Fedwire in the United States and Continuous Linked Settlement (CLS), the international system for settling foreign exchange transactions. In 2012 the overall level of TARGET2 availability reached 100%.

Observations made with regard to the use of the harmonised and advanced TARGET2 services (payment prioritisation, liquidity reservation, sender limits, liquidity pooling, etc.) confirm that they are actively used by a wide range of participants and that they contribute to the smoother settlement of transactions. TARGET2 and its new features have both enabled and driven organisational changes

in credit institutions that operate in several European countries, by allowing them to rationalise their back office functions and consolidate their euro liquidity management.

In October 2012 the Eurosystem adopted its revised strategy for ISO 20022 in TARGET2, aimed at migrating to the new international standard in November 2017. Compliance with the new messaging standard will further foster financial integration, improving interoperability with other market infrastructures using ISO 20022, such as T2S. Further information on the ISO 20022 strategy for TARGET2 can be found on the TARGET2 website.<sup>28</sup>

### TARGET2-SECURITIES (T2S)

T2S is a major infrastructure project of the Eurosystem which aims to overcome the current fragmentation in the securities settlement layer of the European post-trading landscape.

It will provide the technical infrastructure necessary for market participants to operate across borders as efficiently and safely as they do domestically, thus opening up the securities market for competition at the European level. The important contribution of T2S to the establishment of a single market for securities services was also highlighted by the European Council in the conclusions of its meeting on 11 May 2012.

The deep fragmentation of the market infrastructure today, coupled with the existence of procedures that have not yet been harmonised across national settlement systems, results in high costs and inefficiencies. This is particularly evident in cross-border securities transactions, and ultimately creates a considerable competitive disadvantage for European capital markets.

The T2S platform will help solve this problem by offering harmonised and commoditised delivery-versus-payment (DvP) settlement in central bank money, both in euro and in any other participating currency (by agreement with the respective NCBs), at the same price for all participating CSDs.

In mid-2012, 22 European CSDs committed themselves to T2S, including almost all euro area CSDs and five CSDs from outside the euro area. In addition, in June 2012 Denmark's Nationalbank entered into a contractual agreement with the Eurosystem to make the Danish krone available in T2S as of 2018. The high level of CSD participation in T2S, including nearly 100% of the securities volumes currently settled in the euro area, will lead to significant economies of scale and lower settlement costs and will ensure a wide reach for the T2S harmonisation achievements. These benefits could further increase in the future, as T2S remains open to any other European markets and currencies that may decide to join at a later stage.

The project is currently in the development phase, and the platform is due to go live in June 2015. For more details on the project's progress, please refer to the ECB's latest Annual Report or visit the T2S website.<sup>29</sup>

The T2S project is designed to make cross-border settlement as efficient and safe as domestic settlement. From the beginning, the Eurosystem has aimed to avoid the cementation of national specificities into the system's operational blueprint, in line with the market's request to keep T2S "lean", i.e. limited to pure settlement and neutral vis-à-vis participating markets and infrastructures. No specific functionalities have been developed in T2S to support national specificities. Instead,

<sup>28</sup> See the TARGET2 website (<http://www.target2.eu>).

<sup>29</sup> See the T2S website (<http://www.T2S.eu>).

processes have been identified that allow markets to continue to support their different needs using a basic T2S functionality. Participation in T2S will increase the incentives to remove specificities and reach wider harmonisation in order to be more competitive in the European arena.

At present there are still significant differences between settlement practices in the various markets that will connect to T2S. Without a high degree of harmonisation of procedures and market practices, market participants, issuers and investors would not be able to reap the full benefits of a single EU settlement engine. They would instead be forced to resort to costly manual procedures and/or use local intermediaries in a particular market to carry out certain tasks connected to cross-border financial transactions. This implies costs, risks and fragmentation.

The Eurosystem is assisting CSDs and markets in their adaptation to T2S, encouraging the reshaping of current infrastructure in order to make full use of T2S's potential in terms of integration and harmonisation of securities settlement in Europe.

Designing a common settlement service is in itself a driver of harmonisation. The implementation of T2S will establish, for instance, the use of a single system with the same operating hours and deadlines, and the use of standardised communication standards (ISO 20022 messages). In addition, T2S, in cooperation with financial market participants, facilitates further harmonisation of market practices at the European level. The T2S Advisory Group, a senior member's forum which provides advice to the Eurosystem on T2S-related issues, decided in 2011 to further strengthen its catalyst role in this area, and therefore set up the Harmonisation Steering Group. The Group is composed of senior level representatives from the industry and the public sector and is mandated to support the T2S Advisory Group in formulating and monitoring the T2S harmonisation agenda. The Group has defined a set of top priorities and functional targets for harmonisation activities and indicated the specific actors who are responsible for the definition, monitoring and implementation of standards in each activity. The objective is to deliver concrete results before the launch of T2S in 2015.

The priority issues currently being monitored and managed by the Harmonisation Steering Group include, among others, the establishment of the T2S ISO messages and matching fields, the harmonised rules for settlement finality in T2S, the implementation of the T2S corporate actions standards on pending instructions, establishing the possibility for foreign intermediaries to hold securities in omnibus accounts as well as agreeing on technical procedures for smooth cross-CSD settlement in T2S.

The T2S Advisory Group constantly monitors developments relating to all the priority issues identified by the Harmonisation Steering Group, i.e. the issues where it is deemed of critical importance that they be resolved prior to the launch of T2S. To this end, harmonisation progress reports are regularly produced, providing a detailed analysis of the status of each harmonisation activity and the compliance status of each T2S market. The T2S Advisory Group published its second progress report on harmonisation in January 2012.<sup>30</sup> The third progress report, the results of which are shared with the T2S Board and the Governing Council of the ECB, was published in March 2013 and presented, among other things, during a joint ECB-European Commission conference held in Frankfurt on 19 March 2013, entitled "Post-trade harmonisation and financial integration in Europe".

30 See "T2S Harmonisation – Second Progress Report", January 2012, available on the ECB's website.

Furthermore, in 2012 intensive work was conducted by a special T2S Advisory Group task force established in 2011 to develop commonly agreed solutions for adaptation to cross-CSD settlement in T2S, with the aim of increasing the efficiency of cross-CSD settlement for CSDs and their participants on a non-discriminatory basis. The task force, comprising experts from CSDs, banks and central banks, focused in particular on cross-border issues relating to registration of securities, tax procedures, CSD ancillary services, and other legal and regulatory barriers to smooth cross-CSD settlement. The task force drew up proposals for T2S best practices based on the existing standardised T2S functionality.

### EUROSISTEM COLLATERAL MANAGEMENT

Since its implementation in 1999, the correspondent central banking model (CCBM) has fostered financial market integration by enabling all euro area counterparties to use a common set of eligible marketable assets as collateral in Eurosystem credit operations, regardless of the country in which the security was issued. In line with the introduction of non-marketable assets in the common set of eligible assets in 2007, specific procedures for the cross-border use of such assets under the CCBM were developed.

The CCBM is the main channel for the cross-border use of collateral in Eurosystem credit operations. At the end of 2012 it accounted for 55.0% of the collateral used cross-border and 12.5% of the total collateral provided to the Eurosystem. This model was initially set up as an interim solution and market participants have called for some improvements. A project aimed at consolidating the existing technical infrastructure into one single platform handling domestic and cross-border marketable and non-marketable assets (CCBM2), was discontinued by the Governing Council in June 2012 owing to challenges in the area of harmonisation.<sup>31</sup>

The Eurosystem will however implement the previously announced enhancements to existing Eurosystem collateral management services, namely the removal of the requirement to repatriate (marketable) assets from investor CSDs to issuer CSDs before mobilisation as collateral through the CCBM and support the cross-border usage of tri-party collateral management services which are currently only available domestically in some markets. These enhancements to the CCBM are planned to be implemented in 2014.

31 See the press release of 15 June 2012 on Eurosystem collateral management services and systems, available on the ECB's website.



## SPECIAL FEATURES

### A. EURO AREA MONEY MARKET SEGMENTATION IN THE PRESENT LOW INTEREST RATE ENVIRONMENT<sup>1</sup>

*This Special Feature examines the impact that the low interest rate environment may have had on financial market integration in the current context of pronounced market segmentation in the euro area, with a particular emphasis on money markets. The influence of the low interest rate environment is kept distinct from that of the announcement on Outright Monetary Transactions (OMT), which was made shortly after the ECB cut interest rates to a historically low level in July 2012.*

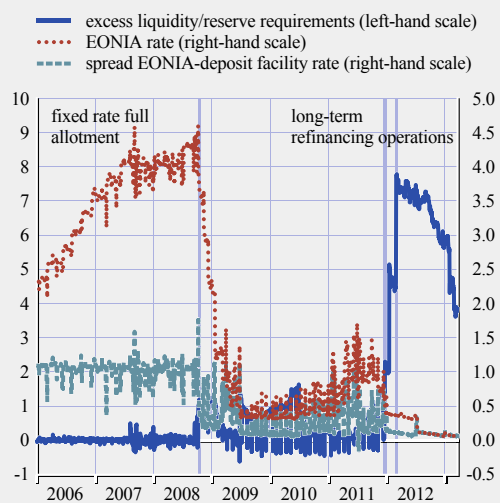
*The main finding of this Special Feature is that the competition for higher yields triggered by the low interest rate environment appears to have benefited mainly counterparties and financial instruments with relatively high ratings, located in countries relatively immune from market tensions, but which did not have safe-haven status. The OMT announcement, which was aimed at safeguarding an appropriate monetary policy transmission and the singleness of monetary policy, could be seen as complementary to the low interest rate environment from a market segmentation perspective, by eliminating tail risks and thereby extending the competition for yields to instruments and countries that were perceived as risky.*

### I INTRODUCTION

Successive ECB rate cuts to historically low levels, which were motivated by the ECB's mandate for price stability, created a low interest rate environment. The ample liquidity provision that resulted from the introduction of fixed-rate tenders with full allotment and three-year refinancing operations exacerbated the impact of low rates as the amount of liquidity remunerated at low and, since July 2012, zero rate in the Eurosystem's accounts increased substantially (Chart 27).

This Special Feature argues that such an environment can have an impact on the degree of financial market segmentation. All else being equal, the decline in money market rates to levels close to zero, including, in some cases, to negative levels for highly rated short-term securities and counterparties located in certain countries, should encourage market participants with the largest amounts of liquidity to invest to search for higher yields in other maturities, markets and countries, thereby compressing the interest rate differentials between similar assets and along the curve. However, perceived high credit risk could seriously undermine the mitigating effect of the low interest rate on money market segmentation by supporting the demand for safe

Chart 27 EONIA and excess liquidity 2006-2013



Source: Reuters and ECB calculation.

1 This Special Feature was prepared by: R. Veyrune, G.-C. Marhic, I. Mak, A. Corvatta and N. Dupré.

haven. Therefore, the impact of the OMT announcement on the perceived credit risk would have to be considered as a factor enhancing the effects expected from the low interest rate environment.

This Special Feature focuses mainly on market segmentation before and after the July 2012 ECB rate cut and the possible implications for financial integration.<sup>2</sup> One indicator commonly used to assess the degree of market integration is the convergence/divergence in prices of different money market products (Treasury bills and short-term securities, unsecured, and secured short-term lending) across countries. However, changes in the degree of price convergence/divergence may not be a reflection of changes in the degree of financial integration if there are also corresponding changes in relevant characteristics of economic agents, such as their credit worthiness, or if the financial instruments are not perfectly identical. Hence, price convergence/divergence could be indicating changes in market segmentation<sup>3</sup> while not reflecting correctly market integration. Therefore, the spread analysis was complemented by an analysis of price correlations carried out in a principal component analysis framework. The latter would analyse price covariance across euro area members and determine how prices responded to factors that are common to euro area members, such as changes in market sentiment. It has the advantage of providing a better grasp of phenomena such as safe haven flows<sup>4</sup> or market conditions convergence (prices moving together across countries), which provide relevant information regarding financial integration. The latest ECB rate cut in July 2012 is taken as the main benchmark to observe changes in market behaviour, as money market rates approached zero following the cut in the ECB deposit rate to zero. The OMT official announcement in September 2012 and the three-year long-term refinancing operations in December 2011 and March 2012 will also be considered.

This Special Feature focuses on six euro area countries, namely Belgium, France, Germany, Italy, the Netherlands and Spain. These countries reflect different experiences through the crisis and have easily available high-frequency data on different money market products that facilitate in-depth analysis. Germany and the Netherlands have constantly been regarded as safe haven by financial markets, and hence have benefited from capital inflows, with yields declining in some cases even into negative territory. Italy and Spain, on the other hand, encountered large increases in yields across various instruments during the euro area sovereign debt crisis. Belgium and France are in-between cases that experienced some weakening of their safe haven statute at times during the crisis. Programme countries<sup>5</sup> are not included in the analysis because they lost market access during most of the period under review, especially before the announcement on OMTs, and therefore lack high frequency data.

This Special Feature is organised as follows: Section 2 provides some background on recent money market developments and the factors that drove money markets into a low interest rate environment. Section 3 reviews the impact on short-term government bond yields of the low interest rate environment. Section 4 reviews convergence in the short-term secured market, in particular for three-month repo rates, in the low interest rate environment. Section 5 reviews short-term unsecured market developments in a low interest rate context based on STEP data. Section 6 concludes.

2 The market for a given financial instrument is considered fully integrated if all economic agents with the same relevant characteristics acting in that market face a single set of rules, have equal access and are treated equally.

3 For the purpose of this Special Feature, market segmentation is defined as substantial and growing price differences between jurisdictions and a persistent drop in turnover in some jurisdictions.

4 Instruments are characterised as having “safe haven” status when they benefit from inflows from investors looking to safeguard their liquidity or capital in periods of market stress. In the presence of safe haven flows, prices would move in opposite direction across the concerned countries, i.e. they would be negatively correlated.

5 “Programme countries” refers to euro area members that requested the financial support of the European Union and the International Monetary Fund.



## 2 BACKGROUND

### ACADEMIC LITERATURE ON LOW INTEREST RATES

The academic literature has addressed the effects of a low interest rate environment. The most common finding is that low interest rates, especially short-term interest rates which are “too low for too long”, could encourage financial institutions to take excessive risks. Maddaloni and Peydró (2010)<sup>6</sup> and Altunbas, Gambacorta, and Marqués-Ibáñez (2010),<sup>7</sup> for instance, gathered evidence that excessively low interest rates over an excessively long period could have contributed to the financial crisis in 2007-08, along with other factors, such as inadequate supervision, and financial innovation. In other words, the search for yields could have negative consequences in term of financial stability.

However, in the current market context, perceived risks are significantly higher than they were during most periods under review in the literature. Accordingly, so far financial institutions have been reluctant to pass the low interest rates on to their customers and have instead continued with their deleveraging process. Diamond and Rajan (2012)<sup>8</sup> argue that banks will take on more short-term leverage or make illiquid loans if the central bank is expected to reduce interest rates at times of financial stress. However, acknowledging that it would be politically and economically undesirable to allow high rates in times of financial stress, they add that central banks may want to raise interest rate in *normal times* in order to preserve banks incentives to maintain low leverage and high liquidity. Freixas, Martin, and Skeie (2011)<sup>9</sup> explored why major central banks lower short-term interest rate during banking crisis while the standard view would be that monetary policy should play a role only if financial disruption directly affects prices or the real economy. The authors argue that reducing short-term interest rate would help the functioning of the interbank market and the reallocation of liquidity.

### ORIGINS OF CURRENTLY OBSERVED FINANCIAL MARKET SEGMENTATION

Market segmentation has a variety of causes. Apart from fundamental differences between countries that are connected to national public sector health and national regulation, segmentation may be related for instance, to technical or legal obstacles, differences in local customs or languages, and asymmetric information about entities operating in other countries. Such obstacles were partially overcome in the years leading up to and after the introduction of the euro. Although in hindsight, convergence in prices and premia demanded in the euro area might have been excessive, reflecting some mispricing due to neglected risks.

The recently observed trend towards lower integration in several financial market segments (for an overview, see Chapter 1 of this report) seems to be driven mainly by a loss of confidence due to the reassessment of counterparties’ creditworthiness among market participants. Such a loss of confidence associated with greater asymmetry in information on counterparties and the

6 Maddaloni, A., and Peydró, J.-L. (2010), “Bank risk-taking, securitization, supervision and low interest rates: Evidence from the euro area and the U.S. lending standards”, *ECB Working Paper Series*, No 1248.

7 Altunbas, Y., Gambacorta, L. and Marqués-Ibáñez, D. (2010), “Does monetary policy affect risk-taking?”, *ECB Working Paper Series*, No 1166.

8 Diamond, D., and R. Rajan, (2012), “Illiquid Banks, Financial Stability, and Interest Rate Policy”, *Journal of Political Economy*, vol. 120, issue 3, pages 552-591.

9 Freixas, X., Martin, A., and D. Skeie (2011), “Bank Liquidity, Interbank Markets, and Monetary Policy”, *Revue of Financial Studies*, vol. 24, issue 8, pages 2656-2692.

dependence of some counterparties on national developments, affects the pricing and volume of transactions across countries, as prices (and quantities traded) reflect not only the credit risk and each participant's appetite for risk, but also the increased uncertainty or loss of confidence in particular in the case of in cross-border trades. Similarly, market participants' risk appetite could be lastingly reduced following a financial crisis like the one experienced worldwide since 2007. In a context of acute risk aversion, market participants might have a strong preference for liquidity (cash) and highly rated counterparties. Institutions located in countries subject to pronounced market stress during the financial crisis would suffer a stigma, while those regarded as safe havens would experience strong demand for their assets.

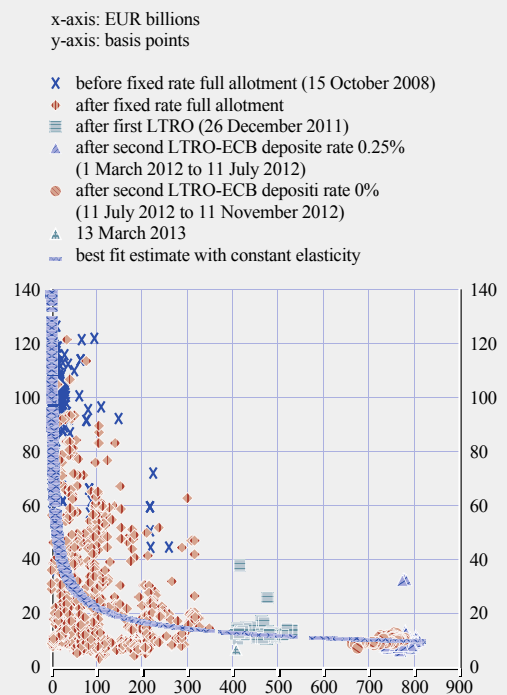
#### DEVELOPMENTS THAT LED TO THE LOW INTEREST RATE ENVIRONMENT

Owing to the scale of excess liquidity, the rate of the deposit facility became the reference for short-term money market rates. As a response to severe frictions in the monetary policy transmission mechanism, the ECB introduced a fixed-rate full allotment policy for its refinancing operations to foster the smooth functioning of the transmission mechanism and thereby also alleviate market tensions and facilitate the refinancing of financial institutions. As a result of this allotment policy, in aggregated terms, financial institutions located in some countries of the euro area and large international institutions accumulated significant liquidity surpluses, which were regularly placed in the Eurosystem's deposit facility, while other financial institutions frequently rely on ECB refinancing operations. The two three-year longer-term refinancing operations (LTROs) increased excess liquidity to record high levels in the euro area (Chart 27). As a result, short-term interest rates drifted toward the rate applied to the ECB's deposit facility. For example, the spread between the EONIA and the ECB deposit rate narrowed to levels near zero (Chart 28).

This and the successive cuts in the ECB policy rates contributed to a near zero interest rate environment. On 5 July 2012, the ECB reduced its main refinancing rate and the rates on the marginal lending and deposit facilities by 25 basis points to the historically low levels of 0.75%, 1.50% and 0%, respectively. This 25 basis point reduction in the deposit facility rate to 0% resulted in a *de facto* zero, and at times even negative, interest rate environment in the euro money market.

The zero interest rate defines a barrier which for economic, technical and psychological reasons is difficult for money market participants to cross. First of all, investors and depositors could avoid negative interest rates simply by holding cash. However, individual would likely not convert financial assets into cash as long as negative rates do not move beyond the costs of storing cash and making payment in cash. Second, interest rates are usually positive in order to

**Chart 28 EONIA – deposit rate spread and excess liquidity relationship 2006-2013**



Sources: Thomson Reuters and ECB calculations.

compensate individuals' preference for immediate consumption. As such, there must be some other extraordinary benefits attached to holding assets and deposits bearing negative rates. Safety would be typically the benefit searched by investors accepting negative rates. Third, since financial markets in the euro area, including money markets, have experienced only very few instances of negative interest rates, which concerned only a limited set of products, many market participants may not be prepared to operate at negative rates. Some agents, such as money market funds, may even be unable to operate at negative rates owing to internal constraints. In fact, even in countries where central banks have applied negative interest rates, banks have not passed negative rates on to their retail customers. Such barriers can make it difficult for financial institutions to run their usual business models. In practice, negative interest rates were mainly applied to non-residents that do not have access to the Eurosystem deposit facility.

The reluctance to invest at very low or, in some circumstances, negative interest rates supported a search for yield that mitigated market segmentation. The "search for yield" triggered by the low interest rate environment has the particular feature of having been fostered by the economic, technical, and even psychological barriers to passing on very low or negative yields, which provided opportunities for diversification in search for positive returns by taking on relatively limited extra risk. Compared to other major markets, the euro area offers a relatively large potential for asset diversification owing to the different risk profiles of euro area countries' domestic markets.

In terms of "cost for safe haven," negative rates go one step further than interest rate differential between two positive yields (i.e. opportunity cost). Indeed, actually paying negative interest rate on "safe haven" asset is different from receiving a lower yield on an asset considered as safe haven compared to another asset not viewed as safe haven. Investors that would accept a lower return against safety might not accept to receive a negative return *i.e. to pay for safety*. Without this zero barrier the demand for safe haven might have been higher in period of stress.

As a rule, market participants adjust their investment strategy to changes in market conditions gradually. Money market funds, for instance, are not likely to immediately change their full outstanding investments. Instead, they might wait for instruments to mature and only then consider re-investing in the money market, under potentially changed conditions. Although the investment strategies of individual money market funds vary, most would typically hold a significant part of their portfolio in Treasury bills, commercial paper or certificates of deposit. Money market funds would also progressively adjust their investment guidelines, allowing investments in lower-rated instruments delivering positive yields if they believe that negative rates on best-rated counterparties may last a long time. Furthermore, banks might pass on the low interest rates to their financial counterparties or customers more or less rapidly and fully, depending on their bargaining power or their reaction function. Banks are also likely to take time to adjust and to open or re-open credit lines vis-à-vis other market participants, partly reflecting different internal decision-making processes between financial institutions.

#### JOINT EFFECTS ON MONEY MARKETS OF THE LOW INTEREST RATE ENVIRONMENT AND THE OMT ANNOUNCEMENT

The low interest rate environment and the OMT announcement could be seen as complementary. The former creates the conditions for a search for yield across countries inasmuch "safe haven" jurisdictions and financial instruments' yields moved into negative territory. The latter enlarged the scope of the search for yield to longer maturities and allegedly more risky instruments or

countries by removing some “tail risks” from the market. This policy mix helped to mitigate market segmentation in the euro area.

The OMT announcement contributed to easing market tensions by affecting the “tail risks” from the market. The comment by the ECB President on 26 July 2012 that, within its mandate, the ECB “will do whatever it takes” to preserve the euro and the subsequent OMT announcement on 6 September 2012 eased market tensions in countries affected by elevated market stress. The OMT announcement paved the way for the possibility of conditional ECB interventions in the sovereign bond market for maturities up to three years.

The influence of the low interest rate environment and the OMT announcement on markets is tightly intertwined. The impact on some money market instruments of the low interest rate environment may be difficult to disentangle from that of the announcements of OMTs. The move to a zero rate on the deposit facility and the OMT announcement were close together. However, the OMT announcement and the low interest rate environment have different targets. OMTs, on one hand, are aimed at safeguarding an appropriate monetary policy transmission and the singleness of monetary policy by addressing tail risks. The low interest rate environment, on the other hand, is geared towards dampening deflationary pressures and preventing a materialisation of downside risks to economic activity.

Thus, the low interest rate environment impacts directly and firstly on the shorter end of the money market curve, while the OMT announcement could have greater implications for longer maturities. Markets in countries affected by financial stress and in countries with safe haven status are expected to be more responsive to the OMT announcement owing to their greater exposure to tail risks or their status as safe havens from tail risks.

#### INTERNATIONAL EXPERIENCES WITH LOW INTEREST RATE ENVIRONMENTS

Several other major markets have experienced low and even negative interest rates. Markets in Japan, the United States, and the United Kingdom are also operating in low interest rate environments as a result of central banks’ actions during the financial crisis. However, compared to the euro area, negative money market rates have recently been less frequently observed in Japan, the United Kingdom, and the United States because the positive remuneration of excess liquidity by the central banks in these markets set the floor on money market transactions slightly above zero. Furthermore, the euro area presents a larger potential for asset diversification and price discrimination between national markets with different credit profiles, which has resulted in consistently negative rates for safe haven jurisdiction issuers and instruments.

With the exception of term deposits, the Eurosystem does not remunerate banks’ deposits at present, unlike other central banks. In contrast to the Eurosystem, which has cut its deposit rate to zero, the Bank of Japan has recently maintained a positive rate on its deposit facility for banks’ excess liquidity (0.1%), the Federal Reserve System introduced a 0.25% rate of remuneration for excess liquidity and required reserves on 9 October 2008, and the Bank of England applies a bank rate of 0.5% to all banks’ reserves in its books. In practice, overnight rates have hovered below the respective rates applied by each central bank because not all market participants have access to the central banks’ deposit facilities. The environment of credit risk perceived to be elevated encouraged transactions with the best-rated and best known counterparties in the market and hence at low rates. In the case of the federal fund market, regulatory changes (described in Special Feature D of this report) also reduced arbitrage opportunities for banks with access to the Federal Reserve System, contributing to the spread between the federal fund rate and the Federal Reserve’s excess liquidity

remuneration. With the ECB's deposit rate cut to zero, euro area banks can only maintain a margin in the overnight market if they are able to attract deposits at negative rates or lend at above the deposit facility rate despite the significant excess liquidity. As wholesale market participants are reluctant to accept negative rates, so far most of the interbank activity has been traded above the level of the deposit facility.

The euro area, with several national issuers having different risk profiles, offers additional opportunities for asset diversification within the area. During the crisis, price differentiation within the euro area increased among the different national jurisdictions and deteriorated into market segmentation. As a result, euro area safe haven jurisdiction issuers and products experienced more consistently negative rates than similar products in Japan, the United Kingdom, and the United States (Chart 29), which do not have such a plurality of jurisdictions. The negative rates increased the cost of safe haven investments and made other countries more attractive for investors once markets stabilised. Thus the diversity of euro area markets increases opportunities for investors to search for yield, especially since the OMT announcement.

Some economies in the euro neighbourhood are sensitive to the developments in the euro area. Denmark and Switzerland experienced strong exchange rate appreciation pressures due to "safe haven" flows, which led to low and negative rates in both markets. Developments in the respective bilateral exchange rates of these economies with the euro provide an indirect opportunity to illustrate the impact of low interest rates in the euro area and OMT on market segmentation.

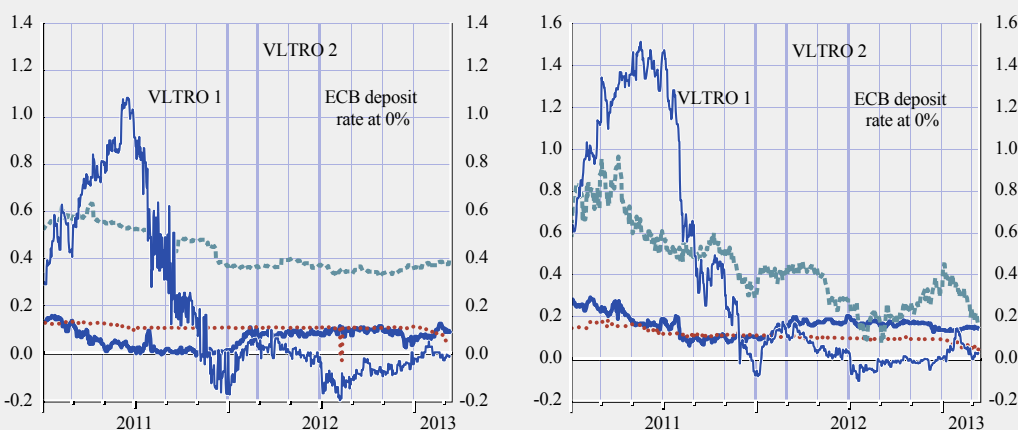
Danmarks Nationalbank shadowed ECB interest rate decisions in line with its monetary policy framework, applying a negative premium relative to the ECB deposit rate to stem currency appreciation pressures. Consequently, Danmarks Nationalbank introduced negative remuneration for excess liquidity once the ECB cut its deposit rate to zero in July 2012. However, Danmarks Nationalbank decided to not penalise banks' reserves up to a predetermined ceiling for current

Chart 29 Treasury bills' rates in four different low interest rate environments

(percentages)

— United States 3M  
 ..... Japan 3M  
 - - - - United Kingdom 3M  
 — Germany 3M

— United States 12M  
 ..... Japan 12M  
 - - - - United Kingdom 12M  
 — Germany 12M



Source: Bloomberg.

account balances considered appropriate for the proper functioning of the payment system and for necessary liquidity buffers. Balances up to this ceiling are subject to a zero interest rate.<sup>10</sup> From July 2012 to January 2013, remuneration on excess liquidity above the ceiling has been set at -0.2%. On 24 January 2013, the remuneration was increased to -0.1%. Accordingly, the interbank market moved into negative territory and private market participants introduced negative rates on some large corporate and institutional deposits, but not on retail deposits. In the search for yields, negative rates spread to the government securities market, which traded at negative yields for residual maturities up to four years. Yields on covered bonds backed by mortgages reached a historically low level, although rates are still slightly above zero.

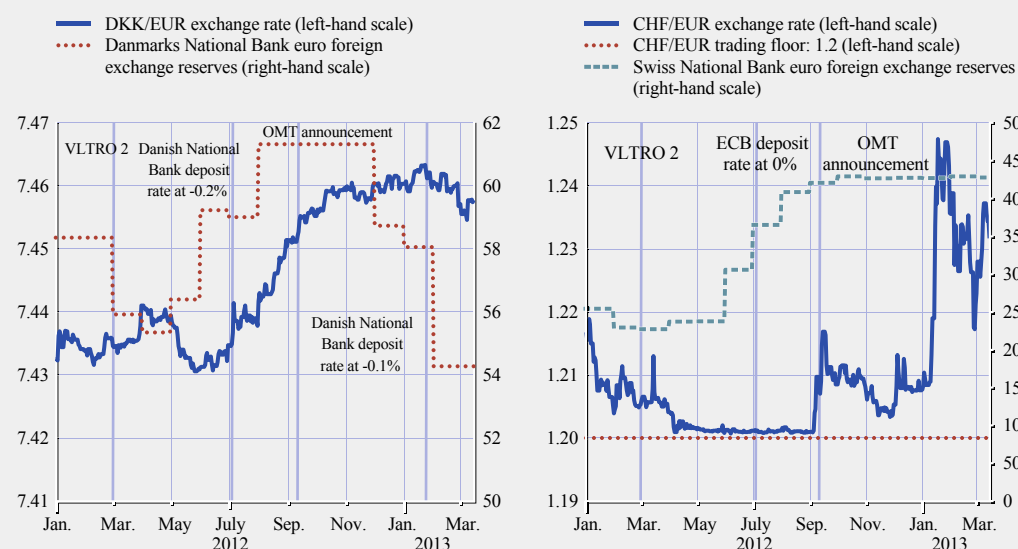
The Swiss National Bank (SNB) set a floor on the exchange rate for the Swiss franc against the euro at 1.20 and intervened in the foreign exchange market, triggering a substantial increase in its foreign exchange reserves. Since July 2011, the injections of liquidity through foreign exchange interventions have remained unsterilised, as the Swiss National Bank stopped issuing certificates of deposit for absorption in August 2011 and the last certificates matured in July 2012. In the absence of a deposit facility or other forms of excess liquidity remuneration (implicitly a zero deposit rate), excess liquidity created a low interest rate environment with several money market instruments trading at negative rates. Some Swiss banks announced that they would introduce negative rates or fees for some deposits placed by other banks.

Chart 30 shows that the Danish krone started depreciating away from its trading band after the cut in Denmark's Nationalbank's deposit rate to -0.2%. The OMT announcement, in addition to the SNB foreign exchange policy, seems to have helped to lift the Swiss franc from its floor while the ECB rate cut may not have had an impact on the franc.

10 Individual current account ceilings also took into account the money market activities of banks in order to not penalise those banks most active in the domestic money market.

Chart 30 Dealing with safe haven flows in Denmark and Switzerland

(EUR billion)



Source: Bloomberg.

Most other markets close to the euro area have maintained a noticeable spread against the euro area money market.

The Czech Republic, however, is an exception. Česká národní banka set its two week liquidity absorption and deposit rates at the same historically low level of 0.05% in November 2012. The two rates are the main money market reference rates, as the Czech market is operating in a structural liquidity surplus. Money market rates accordingly declined to historically low levels, approaching zero for some instruments, such as Treasury bills.

### 3 TREASURY BILL MARKETS

How is the low interest rate environment affecting Treasury bill market segmentation in practice? In the Treasury bill market, some investors are subject to strict credit risk limits related to their risk management policy. This creates a high demand for the best-rated government securities, implying that investors have to accept low and possibly negative rates for some short-term maturities. Alternatively, they could use their credit limits more extensively with other countries or relax them to invest at positive yields. The latter option would contribute to a reduction in market segmentation.

The low interest rate environment supported the integration of short-term sovereign debt markets with a relatively good credit rating, although risk and liquidity differences remain perceptible. Belgium, Dutch, and French yields approached the levels of those of Germany. Moreover, French and Dutch Treasury bills started exhibiting responses to the general risk-on/risk-off factor of the euro area market more similar to those of Germany.

#### TREASURY BILL SPREADS ACROSS MEMBER STATES

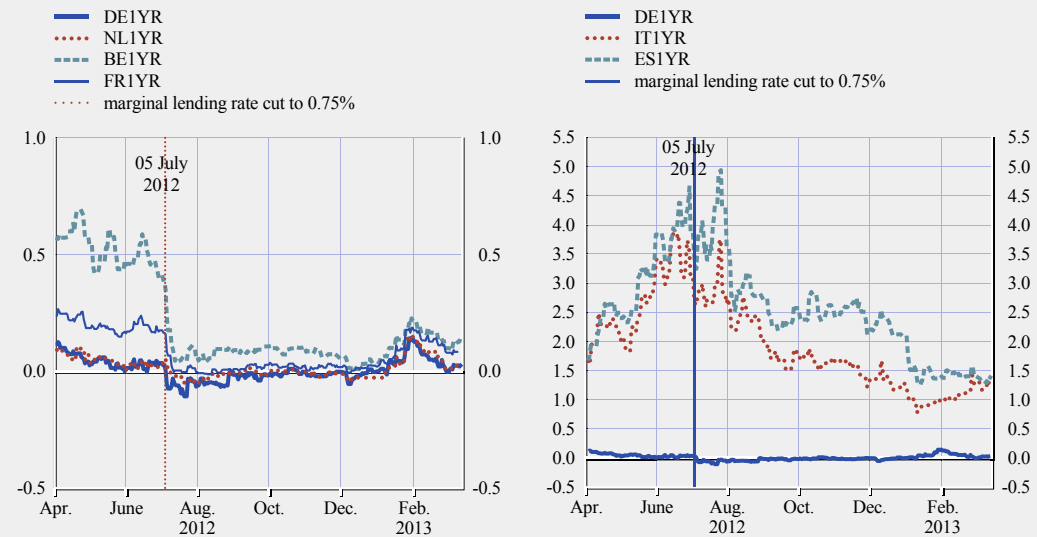
Developments in Treasury bill markets are a useful indicator of the search for yield by investors after the interest rate cut. Short-term government securities issued by Germany, Belgium, the Netherlands, France, Italy and Spain represent more than 90% of euro area Treasury bills. Examining developments in these particular markets provides insights into the possible differences between short-term Treasury bill markets, thereby throwing some light on the issue of market segmentation.

The ECB's interest rate cut of July 2012 seems to have supported deeper integration of Treasury bill markets with relatively good credit rating. The three-year refinancing operation contributed to dampen upward pressures on yields that developed at end 2011 as a result of the euro area sovereign crisis and yields started to decline. However, the cut of the Eurosystem's deposit rate to zero was followed by a rapid convergence of French and Belgian short-term yields to German and Dutch levels and volatility (Chart 31). Spanish and Italian yields, on the other hand, remained volatile and only began to decrease significantly after the ECB's President, Mario Draghi, hinted at potential new measures (OMTs) to address key concerns among market participants at the end of July.

Some differences across countries persisted due to risk perception and structural factors. In particular, the zero interest rate proved to be a relatively effective floor for French, Dutch, and Belgian yields. French Treasury bills temporarily hovered below zero for maturities of less than 12 months, but this phenomenon was not as sustained as for German Treasury bills. In addition, some differences subsisted between the French and Belgian/Dutch Treasury bill markets with yields and volatility remaining higher for Belgian/Dutch than for French Treasury bills. Structural factors,

**Chart 31 One-year Treasury bill yields in selected euro area countries before and after the rate cut**

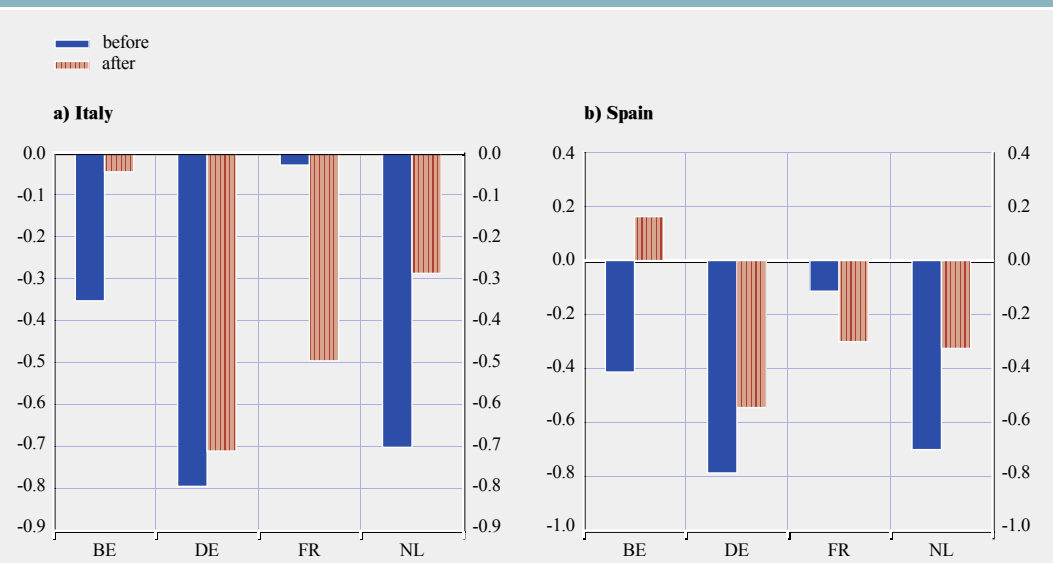
(in percentages)



Source: Bloomberg.

such as the depth of the French short-term government securities market, may have supported its liquidity, which may explain some of the differences in behaviour between these countries. It should be noted that the French government issues Treasury bills relatively frequently in the context of an active cash flow management strategy, which tends to deepen market liquidity.

**Chart 32 Correlation between Italian/Spanish and Belgian/Dutch/French/German Treasury bill yields before and after the July 2012 ECB rate cut**



Source: Bloomberg.

Notes: The correlations are computed based on the yields first difference to address possible non-stationarity issues. The period corresponds to three months before and three months after the rate cut.



Negative yields on some instruments considered as safe haven encouraged asset diversification. As the yields on German Treasury bills edged into negative territory, some investors stopped buying those bills at negative yields, as it represents a boundary that some do not want to cross for economic, technical, and psychological reasons. Instead, they shifted their investments into French and, to a lesser extent, Dutch and Belgian Treasury bills, which in turn drifted toward 0% (and even below zero for some French Treasury bills with short-term maturities). This seems to have loosened the negative correlation between Italian and Spanish Treasury bill markets on one hand and Belgian, Dutch, French, and German Treasury bill markets on the other, especially in the latter case where the zero interest rate constrained yield volatility (Chart 32). The behaviour of investors may have altered later in the context of acute tail risk concerns before the OMT announcement, thus creating strong demand for safe haven assets and supporting first German Treasury bills and then Belgian, Dutch, and French Treasury bills. Subsequently, the diminishing concerns about tail risks reduced the demand for safe haven assets and, in turn, supported other markets, including the markets for Italian and Spanish Treasury bills.

### PRINCIPAL COMPONENT ANALYSIS

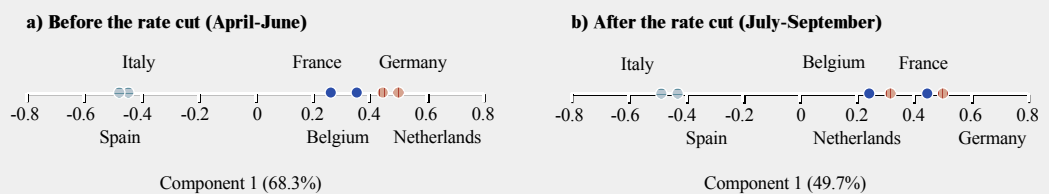
In order to capture the effects of the cut in the deposit rate to zero, a principal component analysis of the variance structure of yields is applied. The principal component analysis (PCA)<sup>11</sup> decomposes the yields' variances in common components, which are not identified ex-ante. The first principal component account for as much of the variability in the data as possible and each of the succeeding components in turn has the highest variance possible under the constraint to be uncorrelated to the preceding component. Ex-post assumptions could be made with regard to the nature of the components. Each yield has a different correlation coefficient or loading coefficients with the common components. The last six months are divided into two almost equally sized samples. The variance structure of the yields is then modelled in a principal component framework for both samples. Compared to a simpler analysis based on correlations, the PCA identifies common components and determines the components' contribution to the variance of the yields.

The principal component could be considered to be the general risk-on/risk-off factor of the market. It is assumed that credit risk perception<sup>12</sup> is the main component (or factor) driving the correlation between the yields of the sample during the observed period. Indeed, the period includes episodes of acute market tensions and the sample includes countries that have been subject to very different levels of financial stress. Therefore, treasury bills' yields in the euro area are likely to be highly correlated, either positively or negatively, as changes in market sentiment would trigger reallocation of investor's flows from one member country to the other. In term of principal component analysis, this should result in a large first principal component. Liquidity could also influence the pricing of Treasury bills. In particular, the frequency of Treasury bills issuances, the level of liquidity of similar instruments or the depth of commercial paper markets, could influence spread levels and their responsiveness to policy changes, although these factors are less likely than risk perception to have dramatically changed in the period under review.

11 The principal component analysis is a mathematical procedure that converts a set of observation of possibly correlated variables into a set of uncorrelated variables called principal components.

12 For references to asset pricing and yield differentials in the euro zone could be found in: C. Favero, M. Pagano, and E., von Thadden, (2010) "How Does Liquidity Affect Government Bond Yields?" *Journal of Financial and Quantitative Analysis*, Vol. 45, No. 1, pp 107-134.

**Chart 33 Loadings (coefficients) for the first two principal components of one-year sovereign yields in selected countries of the euro area**



Sources: Bloomberg and ECB calculations.

Chart 33 shows the correlation coefficient between a given yield and the first component. The position of each country could then be interpreted as follows:

- Germany and the Netherlands have positive and similarly large correlation coefficients with component 1. This implies that Dutch and German yields both respond positively and in similar proportions to variations in component 1.
- Germany and Italy have diverging correlation coefficients, e.g. German yields are positively correlated to component 1 and Italian yields are negatively correlated to the same component. The interpretation is that German and Italian yields react in opposite ways to variations in component 1.

Countries with similar risk profiles exhibit relatively similar values in terms of the coefficients of component 1. In Chart 33, it is clearly visible that the coefficient of this factor is negative for Italy and Spain and positive for the other countries, thereby implying a safe haven status for the latter, as their yields are negatively correlated with Italian and Spanish yields.

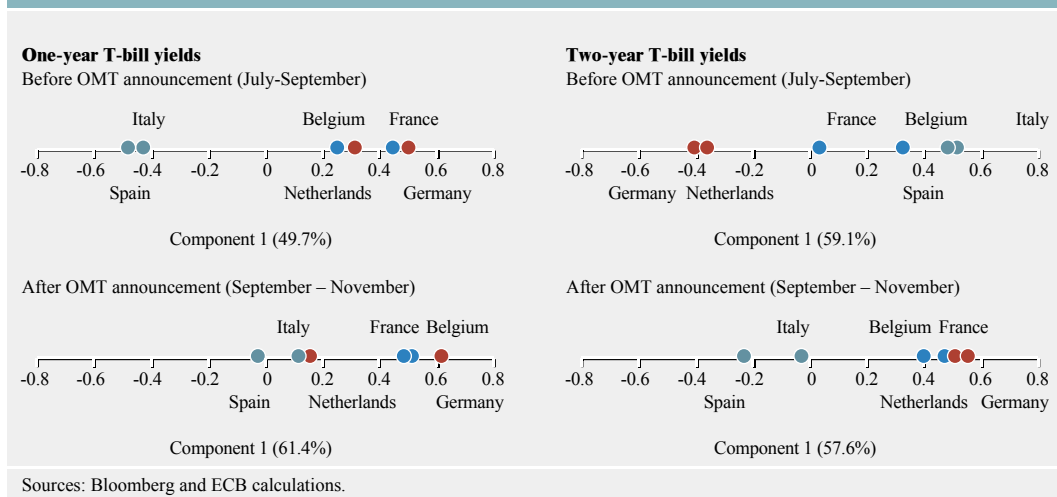
The main result is that France moved closer to Germany and the Netherlands after the ECB rate cut on 5 July 2012. It is unlikely that the French risk profiles fundamentally changed with the rate cut. However, the search for positive yields triggered by the rate cut may have convinced markets participants to reconsider the way they had been pricing France. Belgium, on the other hand, remained half way between Italy/Spain and Germany as far as sensitivity to risk shocks is concerned. Italy and Spain remained relatively close before and after the rate cut.

### THE EFFECT OF THE OMT ANNOUNCEMENT

The sovereign debt market provides sufficient high frequency data to test the impact of the low interest rate environment in the wake of the OMT announcement on 6 September 2012. Our assumption is that, given the focus of the transactions, the OMT announcement would influence more medium-term assets and countries under some market stress.

The components are computed for one-year Treasury bills, which represent the money market segment, and two-year Treasury bonds, which represent the medium-term maturities segment. The low interest rate environment also overlaps with OMT as it was in place before the OMT announcement and remained effective after the announcement. The “after OMT announcement” period (Chart 34) would reflect the combined effect of the low interest rate environment and OMT announcement. This is consistent with the expected complementarity between low rate and OMT announcement with regard to the search for yields.

**Chart 34 Principal component loadings for Treasury bill and Treasury bond yields between selected euro area countries**



Jurisdictions under some market stress were more influenced by the OMT announcement associated with the low interest rate environment. The rate cut left Treasury bill yields' loading practically unchanged for Italy and Spain (Chart 33), while the OMT announcement reduced the loading for both Italian and Spanish Treasury bond and bill yields (Chart 34). This is consistent with the interpretation that the principal component in this analysis reflects the riskiness of the assets and that the OMT announcement, as is the predominant view of market participants, reduced the tail risks in respect of these sovereigns.

Some jurisdiction under less market stress also saw a change in their loadings after the OMT announcement. Belgium Treasury bills' yields loading moved closer to France and Germany. The loading for the Netherlands declined however. This could reflect a decline in the demand for safe haven after the OMT announcement, which could have supported a strong positive correlation between Dutch and German yields before OMT announcement. On the other hand, for two-year Treasury bonds, loading for both Belgium and France moved closer to the German and the Dutch ones. This is consistent with the interpretation that the OMT announcement could have had a stronger influence on longer maturity bonds' yields.

#### 4 SHORT-TERM REPO MARKET

How is the low interest rate environment affecting collateralised market segmentation in practice? High demand for highly rated collateral added to internal and external regulatory constraints that force some investors to hold highly rated collateral would tend to push the repo rate to zero or into negative territory for safe haven jurisdictions, thereby increasing the safe haven penalty and encouraging asset diversification.

This section focuses on three-month repo rates. The secured market is the largest segment of the euro interbank market (see the latest Money Market Survey, published by the ECB in September 2012), in particular as the credit risk inherent in transactions is reduced compared to unsecured transactions.

## REPO SPREADS ACROSS COUNTRIES

The spread between French, Italian, German and Spanish three-month repo rates narrowed after the first and second three-year LTROs. Repo rates started diverging during the second half of 2011, with French and German rates declining and Italian and Spanish rates increasing markedly as the sovereign debt crisis intensified. During the intensification of the crisis, market participants were increasingly concerned that even solvent banks could become illiquid and hence insolvent. The decision to introduce the three-year LTROs and the extensive use made of them alleviated some of these concerns. The corresponding surge in liquidity compressed the spread between French/German and Italian/Spanish repo rates back to their historical levels. The rate cut in December 2011, along with the marked increase in excess liquidity, also contributed to the reduction in spreads as a result of a more active search for yield (Chart 35).

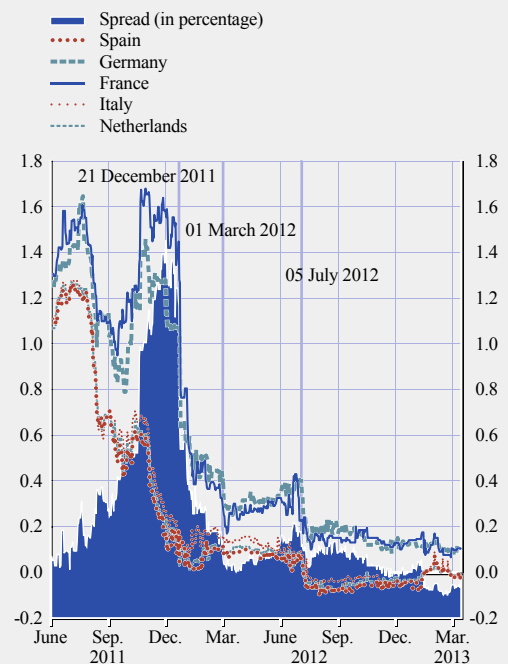
The latest rate cut (July 2012) supported the narrowing of the spread initiated by the liquidity increase. The cut in the deposit facility rate to zero temporarily pushed French and German repo rates into negative territory against the backdrop of the low rate environment and strong demand for “safe haven” instruments. Italian and Spanish repo rates also declined mechanically following the rate cut, but a spread remained vis-à-vis the French and German rates. This spread, which was trending upward just before the latest rate cut in July 2012, declined gradually afterwards, possibly reflecting a “slow motion” search for yields, as excess liquidity and low interest rates persisted over time and maturing investments needed to be rolled over only gradually.

The spread narrowed between German repo rates and French/Belgian/Dutch repo rates. The French repo rate converged with those in Germany, especially after the second three-year LTRO, when excess liquidity increased to historically high levels for the euro area. There were no noticeable spreads between German and Dutch repo rates.

## PRINCIPAL COMPONENT ANALYSIS

In the following, the principal component analysis referred to above is applied to the three-month repo rates. For this analysis the first three-year LTRO, which contributed to the low interest rate environment, is included, as it appears to have had a non-negligible influence on the repo rate (Chart 35). The reference period is thus split into four periods of equal duration (two months each) before and after the first three-year LTRO on 21 December 2011 and before and after the ECB rate cut on 11 July 2012. As there is insufficient data for Belgian repos, Belgium is not included in the analysis.

Chart 35 Repo rates and Repo rate spreads<sup>1)</sup> in some euro area countries



Source: Bloomberg.  
 Note: Collateral is government securities in the respective jurisdictions included in the General Collateral.  
 1) Spread is the max-min difference between the rates plotted in the chart.

The principal component analysis points to some possible market segmentation and its reduction after the rate cut. The negative correlation between two groups of countries in the sample indicates that the yields moved in opposite directions between countries, supporting the presence of safe haven flows. However, after the rate cut, this negative correlation loosened noticeably, as rates approached zero and even dropped below zero in some cases.

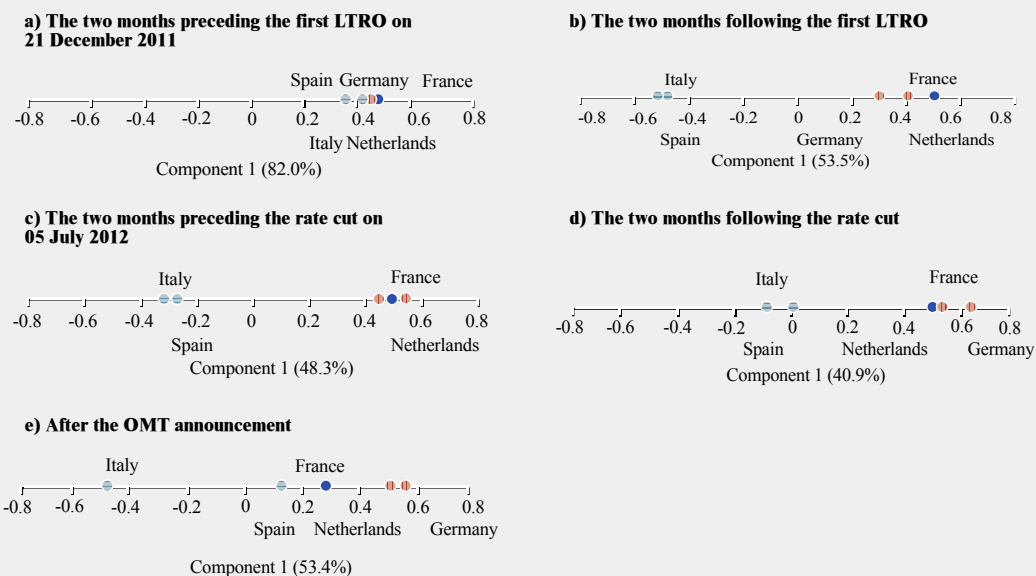
Panel A in Chart 36 shows that the repo rates in the five countries were driven by a large component 1, interpreted as the global risk-on/risk-off factor in the market, during the second half of 2011, which was a period of market stress. The very similar component 1 loadings across countries could reflect a widespread risk-off sentiment that affected all euro area countries in similar ways.

Panel B in Chart 36, after the first LTRO, shows a clear negative correlation between France, Germany and the Netherlands, on one side, and Italy and Spain, on the other side. The coefficients for all countries are relatively large (above 0.2). This could reflect a re-pricing, which may be due to the presence of safe haven flows from the second group of countries to the first. The reduction in the first component's influence could reflect an improvement in market sentiment from risk-off to a more balance risk perception without switching to full risk-on mode.<sup>13</sup> However, it was accompanied by some more discrimination between countries, with diverging rate pricing, which could illustrate the presence of tail risks affecting some specific countries.

Panel C in Chart 36, before the rate cut, shows a very similar picture to Panel B, which suggests that the components and loading coefficients (i.e. the correlations of the countries' repo rates to each component) were stable during the period between the first three-year LTRO and the latest ECB rate cut.

13 A sudden switch to risk-on mode would have kept the first component influence higher.

**Chart 36 Loadings (coefficients) for the first two principal components of three-month repo rates in selected euro area countries**



Sources: Bloomberg and ECB calculations.

Panel D in Chart 36, after the latest ECB rate cut, shows a significant decrease in the coefficients for Italy and Spain, pointing to a loosening in the negative correlations between Italian and Spanish repo rates and those of the rest of the sample. The drop in repo rate volatility after the latest ECB rate cut in France, Germany and the Netherlands reduced their negative correlation with Italy and Spain. As mentioned before, the loss in correlation might be due to the effect of the boundary of a 0% interest rate and investors' reluctance to move further into negative territory.

The OMT announcement appears to have had a much less discernible impact on short-term repo rates. The angle with Germany computed as in the previous section did not significantly change and, in some cases, even seems to have increased. This is consistent with our assumption that the OMT announcement would have a more significant impact on maturities longer than money market duration and on countries or instruments marked by a perceived riskier credit profile.

The analysis of the repo rates sheds some light on the interplay between the first three-year LTRO and the ECB rate cut. Before the first three-year LTRO, most countries appear to have been affected by a generalised risk-off sentiment. After the first three-year LTRO and until the ECB rate cut on 11 July 2012, pricing between countries seems to have diverged, reflecting a more balanced market sentiment associated with a more selective approach by investors to credit risk depending on countries. After the ECB rate cut, the zero lower bound came into play, encouraging the search for positive yields outside safe haven jurisdiction and thus mitigating market segmentation.

## 5 SHORT-TERM UNSECURED MARKET

How is the low interest rate environment affecting the unsecured interbank market segmentation in practice? As long as the Eurosystem offered a positive deposit rate, market participants with access to the ECB deposit facility would receive in the “last resort” a non-zero positive return on liquidity. They were thus able to accept some deposits at below the deposit facility rate, but still at a positive rate, from market participants with no-access to the Eurosystem deposit facility, and then deposit them with the Eurosystem at a slim margin without risk or lend to the best counterparties in the market. Since the deposit facility rate was cut to zero, the banks could either search for higher yields by using their credit limits more extensively or impose negative interest rates on some of their clients to preserve their margins in the deposit market.

### THE UNSECURED INTERBANK MARKET IN A LOW INTEREST RATE ENVIRONMENT

The data available to assess the impact of the low interest rate environment on the unsecured interbank market are limited. Only EONIA data are both available for interbank deposit transactions and provide timely information on the average market lending rate and volume. However, country by country data on rates and volumes are not available, which limits the use that could be done of EONIA data in term of market segmentation analysis.

Persistent excess liquidity created the conditions for the convergence of overnight interbank rates by pushing them towards the ECB deposit rate. Besides the influence of the actual levels of excess liquidity,<sup>14</sup> the persistence of large excess liquidity volumes appear to have slowly but

<sup>14</sup> Excess liquidity is defined as banks' reserves in the Eurosystem current account and deposit facility minus the minimum reserve requirement and banks' reserves placed on term deposits in the Eurosystem.

surely compressed the EONIA-ECB deposit rate spread towards zero,<sup>15</sup> leading to a convergence across countries to the lowest interest rate levels with few exceptions. As shown in Chart 37, the EONIA-ECB deposit spread gradually trended downwards in the low interest rate environment, reflecting the progressive adjustment of the different euro area market segments to the prevailing liquidity conditions. In statistical terms, the pattern of the EONIA-ECB deposit rate spread meets the statistical criterion of a deterministic trend, meaning it has followed, until end 2012, a predictable decreasing linear development with very limited deviations. This corroborates anecdotal evidence pointing to differences in the speed of market participants' responses to the low interest rate environment, depending on their internal credit policies and bargaining power in their respective segments. The market appears to converge over time, with some delays, under the influence of excess liquidity. However, it could be noted that given the current low transaction volumes underlying EONIA, the described development might not be extended to the rest of the money market.

Chart 37 EONIA-ECB deposit rate spread evolution in a low interest rate context

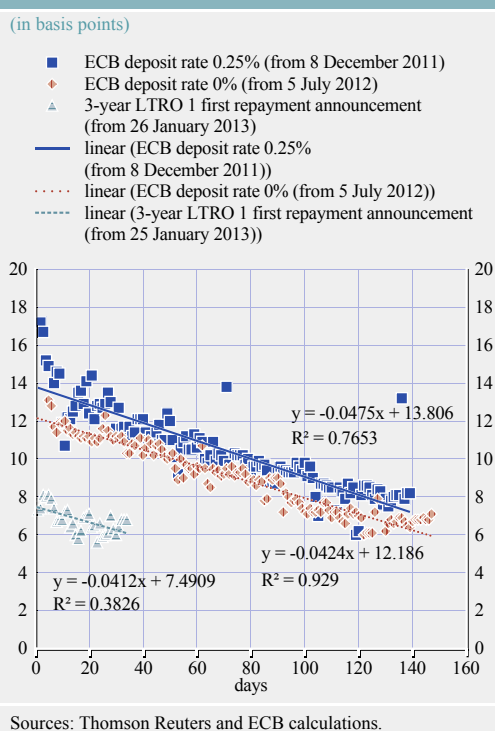


Chart 37 shows the EONIA-ECB deposit rate spread over time. The x-axis represents the number of days that had elapsed since a particular event: the red dots represent EONIA-ECB deposit rate spreads between the first 3-year LTRO and the ECB rate cut on 5 July 2012; the blue dots represent EONIA-ECB deposit rate spreads since ECB rate cut on 5 July 2012; and the green dots represent the EONIA-ECB deposit rate spreads since the 3-year LTRO first repayment announcement on 25 January 2013. During these two periods, excess liquidity does not seem to affect the level of the spread, although it may have had an impact on the spread volatility.

- The level of the spread seems to be mainly a function of the time elapsed under a given interest rate period, supporting the idea of a gradual adjustment of the rate to excess liquidity conditions.
- The regression line during the 0% Eurosystem deposit rate period, which followed the second three-year LTRO and the increase of excess liquidity to historically high levels, has a better fit (i.e. a higher R-square) than the regression line of the previous period, reflecting less dispersion around the linear trend. However, the period that followed the start of the repayment option showed more volatility in the EONIA rate as excess liquidity declined.
- The slope of the trend, however, remained very similar, which corroborates earlier findings (Section 2) that indicated low spread elasticity to excess liquidity for very high levels of excess liquidity.

<sup>15</sup> The spread could not be negative as long as banks could deposit their liquidity with the ECB.

- A jump in the spread can be seen after the rate cut, reflecting the inertia in passing on low rates in some jurisdictions. However, the blue dots remain systemically lower, as a result of the accumulated effect of the time elapsed on the spread during the two periods under review.

The zero bound for the interest rate could compress market margins and encourage the search for yield at the margin. Excess liquidity could foster the search for yield inasmuch as it compressed the market spread<sup>16</sup> on prime counterparties. The cut to zero could have led to a reduction in arbitrage opportunities, as some market participants reportedly received fewer deposits below the ECB deposit rate from banks or financial institutions, which have no access to ECB facilities, as those institutions are reluctant to lend at negative rates. As a result, these deposit rates could not be systematically below zero, compressing margins on prime counterparties and forcing a search for positive yields elsewhere or a withdrawal from the market.

Market participants' reaction to the compression of spreads and margins would depend on their policy with regard to credit risk. Some, in their search for higher yields, will lend to more risky counterparties, mitigating market segmentation and supporting volumes. Others will not participate in the market due to internal credit risk constraints, reducing market turnover further, or transact at very low rates with prime counterparties. Therefore, the threshold of a zero rate could have opposite effects on market volumes, while still supporting market "de-segmentation" at the margin. There is some anecdotal evidence that banks located in countries not affected by market stress re-opened or re-used credit lines with the best rated counterparties located in other countries after the latest rate cut and that this development may have been further enhanced by the OMT announcement.

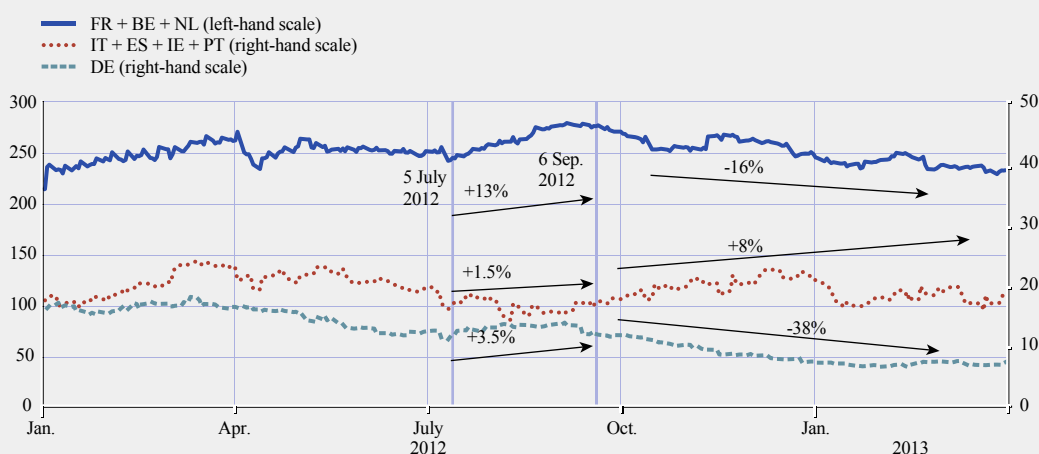
## COMMERCIAL PAPER MARKET

This section uses the Short-Term European Paper (STEP) database, which contains data on corporate and financial short-term debt issued in the euro area. STEP is a market convention that inter alia

<sup>16</sup> The spread here represents the difference between banks' cost of resources (such as the deposit rate) and interbank lending rates.

Chart 38 Private short-term debt in euro by group of countries

(EUR billions)



Source: ECB, STEP data.



requires issuers and other agents involved in debt issuance, such as settlement systems and dealers, to provide the ECB with the complete and accurate data for the production of short-term debt statistics. The data collected by the ECB include information on issuance volumes, yields, and maturities for unsecured issuances of less than one year maturity.

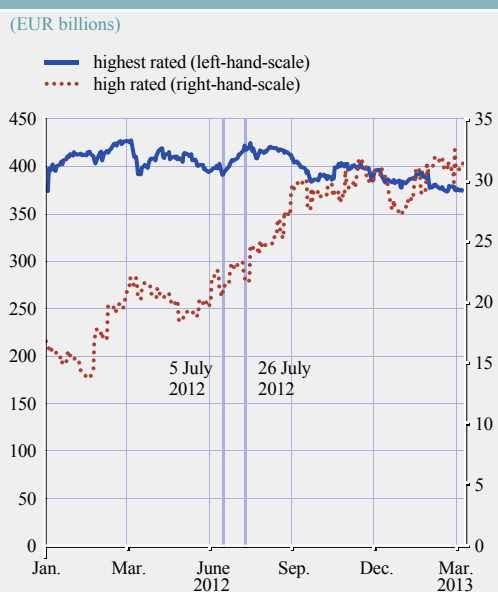
The cut in the deposit facility to zero seems to have benefited countries with good credit rating but not pronounced safe haven status. After the rate cut, the volume of issuance picked up most noticeably in Belgium, France and the Netherlands, and especially in the latter two countries (Chart 38). Italian and Spanish issuance reacted moderately to the rate cut and German issuance remained stable.

The OMT announcement may have supported STEP issuance in countries under market stress. Italian and Spanish issuance advanced strongly after the OMT announcement, while issuance in safe haven jurisdictions (Germany) declined. The latter may be due to German banks taking the opportunity of good market conditions to lengthen their funding maturities and may also reflect lower demand for safe haven paper. To a lesser extent, the same explanation may also apply to banks in countries with a relatively high rating but no safe haven status which seem to have benefited from the OMT announcement.

A reduction in market segmentation could be also noted beyond the strictly geographical dimension. A larger increase in issuance by highly rated issuers compared to the highest rated issuers may be seen as an indication of a more active search for yield among issuers with lower ratings in the low interest rate environment (Chart 39).<sup>17</sup> It should be noted that this concerns counterparties with lower credit ratings but not located in countries affected by market stress, e.g. French, Belgian and Dutch counterparties. In countries affected by some market stress, e.g. Italy and Spain, the largest institutions with the highest rating recorded some increase in their issuance after the comments of the ECB's President, Mario Draghi, on 26 July, but from a very low base.

The longest maturities also seem to have benefited from the search for yield in the low interest rate context (Chart 40). Since the rate cut, activity at short-term maturities, where short-term rates reached levels close to 0%, declined. On the other hand, issuance at the longest end of the money market curve has increased more than issuance in the other maturity brackets. As a result, the maturity spread in commercial papers initially decreased, especially in France and the Netherlands, reflecting a search for yield in longer-term maturities.

Chart 39 Total private short-term debt by issuers' rating



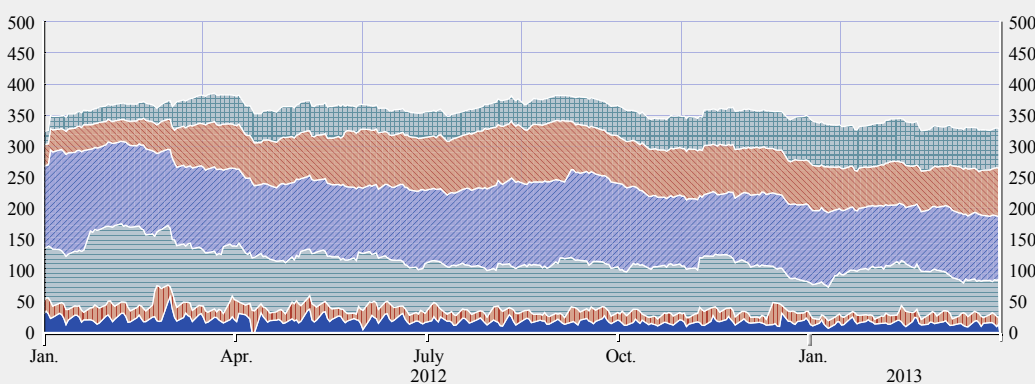
Sources: ECB, STEP data.

<sup>17</sup> STEP issues are classified into three rating classes. Rating 1 includes issues with an underlying rating equal to A1, P1 or F1. Rating 2 includes issues rated A2, P2 or F2. Rating 3 includes issues rated A3, P3 or F3. The ratings classes include notched ratings within each rating class, e.g. issues rated A1+ are also included in the Rating 1 category. If an issue has multiple ratings from different agencies which would place it in different STEP rating classes, the issue is classified in the lowest rating class.

Chart 40 Total private short-term debt by maturity range

(EUR billions)

original maturity (days)	percentage volumes as of 1 July 2012	percentage volumes as of 8 March 2013
0-3	5	4.5
4-9	4	3
10-40	21	19
41-100	34	31
101-200	24	24
201-366	11	19



Source: ECB.  
Note: Credit institutions, highest rated, amount outstanding.

## 6 CONCLUSIONS

The low interest rate environment mostly benefited countries relatively immune from market tensions but without safe haven status. This contributed to a reduction in the segmentation of the euro area money market. The search for yield was motivated by the very low and at times penalising (i.e. negative) yields on prime counterparties and some instruments as a consequence of the large excess liquidity and zero deposit rate. This encouraged investors to take on relatively limited additional risks to preserve a positive return in the money market. The zero interest rate barrier appears to have had a noticeable impact on the search for positive yields in money markets, as participants have been reluctant to accept negative rates or to pass on these rates to their customers and counterparties.

The rate cut seems to have been supportive of deeper integration among Treasury bill markets with relatively strong credit ratings, although not fully converging with safe haven jurisdictions. However, the risk profiles of Italian and Spanish Treasury bills as perceived by market participants remained similar to each other also after the rate cut, and improved for both issuers after the OMT announcement.

Regarding secured short-term markets, the spread on three-month repo rates for a large range of countries narrowed. Negative correlation between rates in different countries points to a degree of market segmentation, which became more apparent after the three-year LTRO reduced generalised market stress. Following the ECB rate cut, the zero interest rate barrier came into play, encouraging the search for positive yields outside safe haven jurisdictions, which moved into negative yield territory, and thus mitigating market segmentation.

Regarding the short-term interbank market, the spread between EONIA and the deposit facility rate remained low but resilient, even if excess liquidity is gradually compressing it. The banks' margin compression due to the zero rate may have stirred a brisker search for yield, depending on counterparties' internal limit constraints.

STEP data on commercial paper point to increased issuance after the rate cut from counterparties with lower credit ratings but not located in countries affected by market stress, e.g. French, Belgian and Dutch counterparties. It also points to an increased search for yield through maturity extension. Italian and Spanish issuances increased somewhat, but only after the OMT announcement.

The OMT announcement supported the low interest rate environment in improving market integration. With regard to financial integration, low interest rates appeared to support the convergence of prices or rates in markets with similar or close risk profiles, but had little impact on markets with higher perceived risk profiles. For these assets, the observed effects seem to have been more influenced by the OMT announcement. The ECB's commitment seems to have reduced the perceived riskiness of many euro area assets and extended the search for yield to a more diverse set of instruments and countries, thereby contributing to a convergence in rates. It also led to a decline in the need for safe haven assets, which also supported market convergence.

The results of this study should be interpreted cautiously. Since the introduction of the full allotment at fixed rate, the Eurosystem, in large part, replaced the money market as reflected in the sharp decrease in money market turnover, especially in the longer maturities. Without the Eurosystem participation in the market, developments in term of euro area money market segmentation could have been different.

## B. THE INTEGRATION OF THE EURO RETAIL PAYMENTS MARKET – SEPA AND BEYOND<sup>18</sup>

*The aim of the Single Euro Payments Area (SEPA) is to enable individuals, businesses and public administrations to make cashless payments in euro throughout Europe from a single payment account anywhere in Europe using a single set of payments instruments as easily, efficiently and safely as they can make them today at the national level.*

*The creation of SEPA has led to a number of improvements in terms of both the efficiency and the security of cashless retail payments. Further benefits are expected to emerge once the migration process has been finalised.*

*From a macroeconomic perspective, the realisation of a more efficient retail payments market through SEPA can facilitate trade, increase competition and innovation, foster financial integration, and add to the completion of the single currency (and monetary union). Thus, it is an important tool for strengthening EU competitiveness and growth.*

*By 1 February 2014, domestic credit transfer and direct debit schemes in the euro area will have to be replaced by truly pan-European ones. Moreover, industry and regulators are working towards the realisation of a SEPA for cards. Last, but not least, innovative retail payment solutions in the domain of internet and mobile payments are emerging to accommodate e-commerce and changing customer needs in the digital era.*

*In the last few years, many non-EU countries have shown great interest in the development of pan-European retail payment solutions as a possible model for modernising their retail payment infrastructures. This shows that the importance of SEPA as a major project for financial integration reaches well beyond the euro area and Europe.*

### I WHY SEPA IS A MAJOR DRIVER OF EURO AREA FINANCIAL INTEGRATION AND HOW IT HAS EVOLVED

The integration of the retail payments market is deeply embedded in the general economic, social and political context of Europe. For the past 50 years, increasing economic integration has strongly supported political reconciliation and social stability in Europe. In 1957 the Treaty of Rome laid the cornerstone for the creation of a single economic market with the free movement of people, goods, capital and services. The Single Market was realised in 1992. In the same year, the Maastricht Treaty set out to create Economic and Monetary Union (EMU) as the next stage of integration, providing the legal foundation for a single European currency. In 1999 the single currency, the euro, was introduced. The exchange rates of the currencies of the Member States initially participating in the third stage of EMU were irrevocably fixed, and the conduct of a single monetary policy under the responsibility of the ECB began. In 2002, the single currency became a tangible reality with the introduction of euro banknotes and coins. Today, 332 million Europeans in 17 countries can pay using the same banknotes and coins everywhere in the euro area.

Over the years, trade in goods and services between EU countries has been growing steadily. Unfortunately, making payments for goods and services traded across borders has remained slower, more cumbersome and much more expensive than making national payments. This is due to the fact that retail payments are based on national payment instruments, national standards and national payment systems. For cross-border payments, these national instruments, standards and systems cannot be used. Consequently, corporates active in several European countries have had to maintain

<sup>18</sup> This Special Feature was prepared by: M. Hempel and R.B. Choudhury prepared Box 1.

accounts in all the countries in which they do business. For all these years, what has been missing is a “single market for cashless payments” that allows payments for goods and services traded across Europe to be made at the same cost and in the same simple and efficient way that is possible at the national level.

A single, harmonised market for cashless retail payments not only makes cross-border payments less costly and less cumbersome to consumers, merchants and corporates, it also gives them greater choice, by opening up the provision of retail payment services to cross-border competition. Payment service providers, retail payment infrastructures and (professional) users may find opportunities for consolidation, interoperability, realising economies of scale and reducing operational costs.

The origins of the SEPA initiative can be traced back to the late 1990s. In 1999, the Eurosystem, in line with its statutory task of promoting the smooth operation of payment systems, as laid down in Article 127(2) of the Treaty on the Functioning of the European Union<sup>19</sup> and Article 3.1 of the Protocol on the Statute of the ESCB and of the ECB,<sup>20</sup> drew up a set of objectives for cross-border retail payments, calling on the banking and payment service industry to fulfil these objectives within a given period.<sup>21</sup> Additional pressure was put on the banking and payment service industry by Regulation (EC) No 2560/2001 on cross-border payments in euro.<sup>22</sup> The Regulation eliminated price differences for end-users between cross-border and domestic retail payments in euro, provided certain conditions were met. This now applies to credit transfers, direct debits, cash withdrawals at cash dispensers, and payments using debit and credit cards.

The banking sector responded in 2002 with a roadmap entitled “Euroland: Our Single Payments Area!”, and established the European Payments Council (EPC). The EPC is the decision-making and coordination body of the European banking industry in relation to payments. It consists of 74 members representing banks, banking communities and payment institutions active in the EU, Iceland, Norway, Liechtenstein, Monaco and Switzerland. The EPC develops the payment schemes and frameworks which help to realise the integration of the euro retail payments market.

Overall, the aim of SEPA is to enable individuals, businesses and public administrations to make cashless payments in euro throughout Europe from a single payment account anywhere in Europe using a single set of payments instruments as easily, efficiently and safely as they can make them today at the national level. For that purpose, the EPC created the SEPA credit transfer (SCT) and the SEPA direct debit (SDD) rulebooks and the SEPA cards framework.

Given that SEPA is closely linked to the political and social ambition of a more integrated, competitive and innovative Europe, it soon became clear that the actual migration to the use of SEPA instruments required a closer involvement of actors on the demand side, a broader governance structure and legislative support from the regulators. Whereas the harmonisation of the legal environment for payment services has been achieved mainly by means of the Payment Services Directive (PSD)<sup>23</sup> and the harmonisation of rules and standards has been undertaken by the banking

19 See Consolidated versions of the Treaty on European Union and the Treaty on the Functioning of the European Union (OJ C 115, 9.5.2008, p. 1).

20 The Protocol on the Statute of the European System of Central Banks and of the European Central Bank is annexed to and forms an integral part of the Treaty on the European Union and the Treaty on the Functioning of the European Union.

21 See *Improving cross-border retail payment services – the Eurosystem’s view*, ECB, September 1999.

22 Regulation (EC) No 2560/2001 of the European Parliament and of the Council of 19 December 2001 on cross-border payments in euro (OJ L 344, 28.12.2001, p. 13) – repealed by Regulation (EC) No 924/2009.

23 Directive 2007/64/EC of the European Parliament and of the Council of 13 November 2007 on payment services in the internal market (OJ L 319 of 5.12.2007, p. 1).

industry, the Eurosystem has contributed as a facilitator by promoting private sector action, helping to overcome coordination problems, seeking to involve all relevant stakeholders and, in cooperation with the European Commission, setting public policy objectives. It has provided guidance to the payments industry and other stakeholders through a wide range of activities (e.g. reports, speeches, conferences and discussion fora), provided information and support to EU legislators, and issued opinions on legal initiatives. This helped pave the way for the banking industry to deliver the SCT and SDD schemes in 2008 and 2009.

To ensure that migration to the SEPA schemes takes place in a timely manner, in its 6th SEPA Progress Report, issued on 24 November 2008, the Eurosystem drew attention to the need to set an ambitious but realistic end-date for the migration to the SCT and SDD schemes. Following intense debate between the Eurosystem, the European Commission and the market, the SEPA migration end-date Regulation<sup>24</sup> was adopted by the European Parliament and the Council and entered into force in March 2012. The regulation lays down rules for the initiation and processing of credit transfers and direct debits denominated in euro within the European Union. It also defines a clear timeline for the implementation of these rules. For the euro area, the final deadline is 1 February 2014. The deadline for euro-denominated payments in non-euro area EU countries is 31 October 2016. By these dates, existing national euro credit transfer and direct debit schemes will have been phased out and replaced by the SEPA-compliant alternatives. The ECB had welcomed and supported the legislative proposal in its Opinion of 7 April 2011.<sup>25</sup>

The ECB investigated the social and private costs of cash and retail payment instruments and published its study in September 2012.<sup>26</sup> The study, which was conducted in cooperation with 13 NCBs and was the first European study in this area, established that the social costs are substantial, amounting to €45 billion, or 0.96% of GDP, for the 13 EU countries covered. Extrapolating the results to cover the 27 EU Member States, the social costs of retail payment instruments are close to 1% of GDP or €130 billion. Private costs are those incurred by individual participants in the payments chain – including items such as transportation of cash, management of electronic transactions, acquisition of new customers, credit risk analysis, provision of terminals, fraud prevention, and fees paid to other participants in the payment chain. Social costs are defined as the aggregate costs to society as a whole, which, by definition, excludes the fees paid to other participants in the payment chain. Half of these social costs are incurred by banks and interbank infrastructure providers, while retailers bear 46%. The social costs related to central banks and cash-in-transit companies account for 3% and 1% respectively.

Based on a representative sample, the study finds that cash payments account for nearly half of the total social costs. As the most commonly used payment method, cash payments have on average the lowest social costs per transaction, followed closely by debit card payments. However, debit card payments have on average the lowest social costs per euro transaction value. Cheques are the most expensive form of payment. The unit cost for the respective instruments in the different countries depends on characteristics specific to each country's payment system, on the market size and level of development, and on payment behaviour. Economies of scale seem to be present in the provision of retail payment services for almost all payment instruments.

24 Regulation (EU) No 260/2012 of the European Parliament and of the Council of 14 March 2012 establishing technical and business requirements for credit transfers and direct debits in euro and amending Regulation (EC) No 924/2009 (OJ L 94, 30.3.2012, p. 22). The regulation has EEA relevance.

25 Opinion of the European Central Bank on a proposal for a Regulation establishing technical requirements for credit transfers and direct debits in euro (CON/2011/32).

26 Schmiedel, H., Kostova, G. and Ruttenberg, W., "The social and private costs of retail payment instruments: a European perspective", *Occasional Paper Series*, No 137, ECB, September 2012.

Table 1 SEPA key facts, figures and dates

<i>Geographical coverage</i>
EU 27 + Iceland, Liechtenstein, Monaco, Norway and Switzerland
<i>Number of payments affected by SEPA in the euro area</i>
About 17 billion credit transfers, 18 billion direct debits and 22 billion card payments per year (Statistical Data Warehouse 2011)
<i>Legal basis</i>
Directive 2007/64/EC on payment services in the internal market (the Payment Services Directive) Regulation (EC) No 924/2009 on cross-border payments in the Community and repealing Regulation (EC) No 2560/2001 Regulation (EU) No 260/2012 establishing technical and business requirements for credit transfers and direct debits in euro and amending Regulation (EC) No 924/2009
<i>SEPA instruments</i>
SEPA credit transfer (SCT) provides customers with a single means of transferring funds regardless of whether it involves a domestic or a cross-border payment. SEPA direct debit (SDD) makes it possible, for the first time, to charge directly an account in one European country for services provided by a company based in another European country. SEPA for cards will enable consumers to use the same cards they use in their own country for purchases and cash withdrawals anywhere in Europe more conveniently; for merchants, accepting cards will become easier and more attractive.
<i>SEPA standards</i>
ISO 20022 XML IBAN (BIC no longer required for domestic payments after 1 February 2014 or for cross-border payments after 1 February 2016) EMV and other standards for cards, payment terminals and ATMs
<i>SEPA documentation</i>
SEPA credit transfer Rulebook and Implementation Guidelines by the EPC SEPA direct debit Rulebooks (Core and Business-to-Business) and Implementation Guidelines by the EPC SEPA Cards Framework by the EPC SEPA Cards Standardisation Volume, published by the EPC and maintained and endorsed by the Cards Stakeholders Group (CSG)
<i>SEPA credit transfer launch date and current level of usage</i>
28 January 2008; 34.9% of credit transfers in the euro area are SCT (December 2012)
<i>SEPA direct debit launch date and current level of usage</i>
2 November 2009; 1.9% of direct debits in the euro area are SDD (December 2012)
<i>Reachability</i>
Deadline for payment service providers to ensure that all payee payment accounts reachable for national credit transfers and all payer payment accounts reachable for national direct debits are also reachable via EU-wide SCT or SDD schemes 31 March 2012
<i>Migration deadline for SCT and SDD within the euro area; no BIC (business identifier code) to be required for national payments</i>
1 February 2014
<i>No BIC to be required for cross-border payments; niche products migration complete</i>
1 February 2016
<i>Migration deadline for SCT and SDD for non-euro area SEPA countries</i>
31 October 2016

The results from the present study may trigger a constructive debate about which policy measures and payment instruments are suitable for improving social welfare and realising potential cost savings along the transaction value chain. It also indicates that the decision by the banking industry not to support the cross-border use of cheques in SEPA was a wise one.

## 2 MAJOR BENEFITS FROM THE CREATION OF SEPA

The creation of SEPA has led to a number of improvements in terms of both efficiency and security. Before SEPA, domestic and cross-border retail payments were based on different standards, different rules and different procedures. Consumers had to use different forms and provide different account details depending on whether they wanted to make a credit transfer within their home country or to a payment recipient in another euro area country. Consumers also had to use different

cards depending on whether they were in their home country or abroad. Citizens working abroad for some time needed to have different bank accounts in their home country and their working country. Cross-border direct debits did not exist.

In SEPA, one payment account, one type of credit transfer, one type of direct debit and one card – limited only by brand acceptance on the part of the merchant – suffice for making payments. This brings a large potential for efficiency gains for everybody involved in the payments chain, including retail payments infrastructures providing processing, clearing or settlement services.

SEPA will help corporates to optimise the handling of payments through the adoption of a single format in the back-office procedures and the integration with other advanced services such as e-invoicing or automated reconciliation. Banks will be able to offer their services more easily to customers throughout the euro area. They will also gain in efficiency thanks to the management of all payments, national and cross border, on a common platform.

As regards the pricing of retail payment services, the Regulation on cross-border payments eliminated differences in charges for cross-border and national payments in euro. As a result, average fees for cross-border transfers declined by 90% between 2001 and 2005.<sup>27</sup> However, across countries, the fee structure for payments is still far from homogenous. This may be one of the reasons why usage of non-cash payment instruments varies so widely, with the number of cashless payment transactions per capita in Nordic countries being five to six times as high as in some southern European countries. However, it is expected that once SEPA migration is finalised, more price convergence between countries will materialise. Wider competition is a key factor here. For instance, direct debit creditors (e.g. utility companies) may be induced to move their direct debits to a payment service provider from another country if that service provider offers a better deal. This was not possible in the past.

The creation of SEPA, supported by the new legal framework introduced by the PSD, has also brought down execution times for retail payments. Since the early 1990s, average execution times for retail payments in the EU have decreased from about five days to no more than one day. In fact, since 1 January 2012, the PSD has obliged payment service providers to make funds accessible to the recipient by the end of the next business day after a payment order is received. Thus, consumers can be assured access to their funds on day D+1. In some European countries, even faster payment services with almost immediate availability are being offered or are currently under development.

Ensuring the security of retail payments is a key factor for consumers and businesses in establishing their trust and confidence in retail payment instruments. Card fraud in particular has generated many negative headlines in the press and potentially undermines the trust and confidence of consumers and businesses.

In SEPA, the total level of card fraud amounted to €1.26 billion in 2010. Card fraud in relative terms (i.e. the share of fraud in the overall value of all transactions) fell from 0.045% in 2007 to 0.040% in 2010, after having reached 0.050% in 2009.<sup>28</sup> The main reasons why fraud at automated teller machines (ATMs) and point-of-sale (POS) terminals was lower in 2010 than in 2007 are the improvements in the security of cards and the underlying payment infrastructure. The most

<sup>27</sup> See “Commission Staff Working Document addressed to the European Parliament and to the Council on the impact of Regulation (EC) No 2560/2001 on bank charges for national payments”, European Commission, July 2006, available on the European Commission’s website (<http://ec.europa.eu>).

<sup>28</sup> See *Report on card fraud*, ECB, July 2012.



important enhancement was the wider adoption of EMV, a chip-based standard. This offers stronger security features than conventional magnetic stripes both for the physical card (since, unlike the stripes, the chip cannot easily be duplicated) and for the technological infrastructure behind the transaction. The adoption of these safety features has been recommended by the ECB and forms part of the SEPA migration.

However, card-not-present transactions (i.e. card payments via mail, telephone or the internet) do not benefit from these security enhancements, and in this domain fraud has been on an upward trend in both absolute and relative terms (see also the text on SecuRe Pay in Section 4 below).

From a macroeconomic perspective, the realisation of a more efficient retail payments market through SEPA can facilitate trade, increase competition and innovation, foster financial integration, and add to the completion of the single currency (and monetary union). Thus, it is an important tool for strengthening EU competitiveness and growth.

Furthermore, an efficient retail payments market is associated with higher bank stability, as retail banking and retail payments activities generate regular and stable revenue streams for banks. From a cost/benefit perspective, banks perform better in countries with more developed retail payment services.<sup>29</sup>

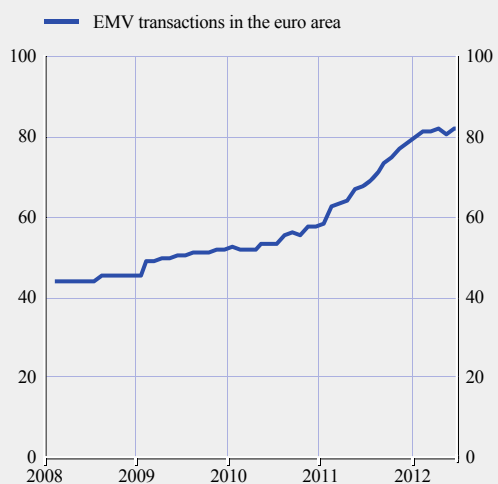
### 3 THE REMAINING CHALLENGES IN SEPA

The SEPA migration countdown is running fast. By 1 February 2014, domestic credit transfers and direct debits in the euro area will have to be replaced by truly pan-European ones. Despite the legal certainty provided by the SEPA migration end-date Regulation, and despite all the efforts made so far by public authorities, the financial industry, individual end-users and end-user groups, this process can by no means be taken for granted and additional actions need to be taken. Communication will play a key role in ensuring successful migration.

The migration figures speak for themselves. In December 2012, SCT had a 34.9% share of credit transfers in the euro area.<sup>30</sup> At individual country level, figures vary greatly. In some countries, SCT migration is finalised or almost finalised (e.g. Finland, Slovenia and Luxembourg). In others, it is far advanced (e.g. Belgium and Greece). However, a considerable number of countries have opted to migrate in one big move, which is not without its challenges.

Chart 41 EMV transactions in the euro area

(percentage of total transactions at POS terminals)



Source: ECB.

29 Hasan, I., Schmiedel, H. and Song, L., "Return to retail banking and payments", *Working Paper Series*, No 1135, ECB, December 2009.

30 See Chart 33 in the Statistical Annex.

This is even truer for SDD. In December 2012, SDD had only a 1.9% share of direct debits in the euro area.<sup>31</sup> With the exception of a few countries in which there has been noticeable progress (e.g. Belgium, Greece, Malta and Austria), SDD migration will have to move from virtually zero now to 100% by 1 February 2014.

But migration is about more than figures, technicalities and IT systems. It also has to address issues deeply rooted in the mind-sets of individuals. For example, a consumer currently using direct debits in his own country has to be perfectly comfortable with the notion that a creditor (such as an electricity provider or mobile phone company) may debit his account via a bank in another SEPA country. If this is not accepted, one of the principal goals of SEPA will not be fully achieved, namely the elimination of differentiation between national and cross-border payments in euro.

Beyond the migration to SCT and SDD, another important area in which further work is clearly needed is SEPA for cards. In general, the requirements which the European card market (or, indeed, any well-functioning and competitive card market) must fulfil, irrespective of the number of card schemes offered in the market, are: i) the separation of card schemes and processing entities, ii) the creation of a framework for the processing of card transactions, iii) cards standardisation, iv) no geographic restrictions on issuing, acquiring and/or licensing, and v) the establishment of a certification framework for cards and terminals. The work currently under way in these areas must be finalised by the industry in line with guidance of the Eurosystem and the European Commission.

Card payments are one of the key issues in the European Commission's Green Paper "Towards an integrated European market for card, internet and mobile payments" which was published in January 2012 for public consultation.<sup>32</sup> The Eurosystem provided its reaction to the Green Paper in March 2012.<sup>33</sup> It is expected that in 2013 the European Commission will launch legal initiatives relating to cards as a follow up in the context of the Single Market Act II,<sup>34</sup> the Green Paper and the forthcoming review of the PSD.

To improve governance of SEPA, in particular the involvement of corporates, consumers and merchants, the Eurosystem promoted the creation of a European social forum for retail payments. This led to the establishment of the SEPA Council in 2010. The SEPA Council consists of high level representatives from both the demand and supply sides of the European retail payments market. Its objective is to foster consensus on the next steps towards the realisation of SEPA and an integrated retail payments market. The SEPA Council is co-chaired by the ECB and the European Commission.

SEPA is a major European project for financial integration. Successful migration is a key issue for its credibility as well as for future projects. The Eurosystem is committed to support SEPA migration through active communication at national and European level.

31 See Chart 33 in the Statistical Annex.

32 Green Paper – Towards an integrated European market for card, internet and mobile payments, COM(2011) 941 final, 11 January 2012.

33 "Eurosystem reaction to the Commission's Green Paper 'Towards an integrated European market for card, internet and mobile payments'", ECB, 23 March 2012, available on the ECB's website.

34 Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Single Market Act II – Together for new growth, COM(2012) 573 final, 3 October 2012.

#### 4 LOOKING FORWARD TO THE NEXT GENERATION OF RETAIL PAYMENTS

Beyond the core SEPA payment instruments, innovative retail payment solutions in the domain of internet and mobile payments are emerging to accommodate changing customer needs in the digital era – being online anytime, anywhere, with any device. However, with the exception of a few successful national initiatives, the development, rollout and usage of genuine internet payment solutions have not kept pace with the rapid growth of e-commerce. In the field of mobile payments, smaller pilot projects have been organised in several European countries, sometimes followed by actual deployments. Overall, the Eurosystem is concerned that too little attention is being paid to technical standardisation and business interoperability, which will be key factors of success also in these areas of SEPA, thus possibly recreating the same fragmentation which SEPA was designed to eliminate.

Strong governance is needed in the retail payments market to overcome the current fragmentation and push for adequate Europe-wide solutions (irrespective of country of origin). Strong governance is also needed because innovative services relating to payments are often provided outside the banking industry by licensed and non-licensed entities. Payment initiation services provided by third parties are rapidly gaining in importance and are the subject of extensive debate. The extent of payment account access, the appropriate legal and regulatory framework, the need for contractual agreements, costs related to providing access, data protection and consumer rights are issues that need to be addressed at policy level in order to create and maintain a level playing field for all types of payment service providers.

Regardless of the type of service, ensuring the safety and reliability of innovative payment products and payment initiation channels is of primary importance. Customer and payment data need to be properly protected, and fraud needs to be prevented at all stages of the payment chain. In fact, security is one of the features that can “make or break” innovative payment solutions.

In April 2012, the European Forum on the Security of Retail Payments (SecuRe Pay), a voluntary cooperation among overseers and supervisors of payment service providers in the EU, launched a public consultation on recommendations for the security of internet payments. The final version was published in January 2013.<sup>35</sup> These harmonised, minimum security recommendations will be integrated into the existing supervisory and oversight framework. As a next step, SecuRe Pay will complement these recommendations with recommendations to improve the security of payment account access services provided by third parties, on which a public consultation was launched in January 2013. Last, but not least, SecuRe Pay has also started addressing the security of mobile payments.

Obviously, the development of innovative retail payment solutions is not limited by the borders of either the euro area or the EU. At the global level, the ECB and seven NCBs contributed to the work of the Committee on Payment and Settlement Systems (CPSS), whose Working Group on Innovations in Retail Payments produced a report which was published in May 2012.<sup>36</sup> The report provides an overview of innovative retail payment activities in CPSS countries and other selected countries, identifies a number of exogenous and endogenous factors that could serve as drivers for retail payment innovations or as barriers to them, gives some pointers as to what can be expected over the next five years and identifies a number of issues for central banks in connection with their

<sup>35</sup> *Recommendations for the security of internet payments*, ECB, January 2013.

<sup>36</sup> *Innovations in retail payments – Report of the Working Group on Innovations in Retail Payments*, Committee on Payment and Settlement Systems, May 2012.

various tasks and responsibilities as catalysts, overseers and/or operators of payment systems. The ECB and the seven NCBs will also actively contribute to the work of a new CPSS Working Group on non-banks in retail payments. In addition, the ECB is one of the first public authorities to have published a report on virtual currency schemes.<sup>37</sup>

As they seek to strengthen the formal financial sector, and improve financial inclusion and efficiency, many non-EU countries have shown great interest in the development of pan-European retail payment solutions as a possible model for modernising their own retail payment infrastructure. This shows that the importance of SEPA as a major project for financial integration reaches well beyond the euro area and Europe.

<sup>37</sup> *Virtual currency schemes*, ECB, October 2012.

#### Box 1

##### SEPA AND THE ECB'S PAYMENTS STATISTICS

In 1992, the Committee of Governors of the central banks of the Member States of the European Economic Community published the first statistics on payment systems in the European Community, covering the period 1989-1990.<sup>1</sup> In the following years, this publication, commonly referred to as the “Blue Book”, was regularly updated with statistical addenda for subsequent periods. However, since 2006, the ECB has published a comprehensive set of payments statistics encompassing EU and euro area aggregates, as well as individual country data on payments instruments, terminals and infrastructures in time-series format. A major enhancement is that all the time-series are based on harmonised definitions starting from the year 2000. The data are available with an annual frequency and published around nine months after the year to which they refer. The latest vintage spans the period 2000 to 2011.<sup>2</sup> Payments statistics are collected from the Eurosystem on the basis of Guideline ECB/2007/9 on monetary, financial institutions and markets statistics; the main reporting agents are credit institutions, interbank funds transfer systems (IFTSs)/processors and, to a lesser extent, payments institutions (and other payment service providers) as well as card schemes and trade associations.

To date, the payments statistics provide a relatively complete coverage of the European cashless retail payments market. They have been used for a variety of purposes, including as an input for monitoring the ongoing process of financial integration in the euro area. As the aim of SEPA is to harmonise the facilities offered to customers in the field of retail payments, and as its implementation is under way and other developments are gaining in significance in the European payments landscape, it has become necessary to review the scope and content of the current data collection so as to ensure that the payments statistics remain relevant and in line with the evolving needs of users.

<sup>1</sup> “Payment Systems in EC Member States”, prepared by an ad hoc working group on EC payment systems, Committee of Governors of the central banks of the Member States of the European Economic Community, September 1992.

<sup>2</sup> See ECB press releases on payments statistics, available on the ECB's website at <http://www.ecb.europa.eu/press/pr/stats/paysec/html/index.en.html>.

On this basis, a “merits and costs procedure”<sup>3</sup> was launched at the end of 2011. Such a procedure is required when the production of new or substantially enhanced statistics is expected to have a significant impact on reporting agents. This is the case with payments statistics, where, on account of the need to keep pace with and monitor developments in the area of payments, the following categories of changes in the reporting framework were identified: i) methodological changes; ii) geographical breakdowns; iii) monitoring of non-SEPA transactions; iv) breakdowns by type of initiation; and v) new information on payment service providers and payment services.

The merits and costs procedure is a structured exercise, with both quantitative and qualitative elements. It helps set priorities and facilitates discussion with users and reporting agents. It commences with the definition of new statistical requirements and ends with a final decision to be taken by the ECB Governing Council. Subsequently, it is planned that the enhanced set of payments statistics will be collected from the year 2015 onwards, covering data for the reference period 2014 onwards, thereby enabling all SEPA-compliant transactions to be identified and reported from the date of completion of SEPA migration. Transitional provisions may be applied in 2014 to ensure continuity with the current time-series.

3 See “Quality assurance procedures within the ECB statistical function”, available on the ECB’s website at <http://www.ecb.int/pub/pdf/other/ecbstatisticsqualityassuranceprocedure200804en.pdf?961c97a04730565d43a600962ebb8a2a>.

## C. SECTORAL ACCOUNTS AND REBALANCING IN THE EURO AREA<sup>38</sup>

*In a financially integrated area comprising several countries, financial deficits (or surpluses) of a given sector in any country can, in principle, be financed (or invested) equally well in any other country within the area. Following this line of reasoning, cross-country patterns in sectoral financial balances can provide a complementary perspective on financial integration. This Special Feature builds on the similar one already published in the 2012 Financial Integration Report, examining how aggregate and sectoral savings-investment imbalances have developed in euro area countries in the more recent quarters.*

*The analysis suggests that the build-up of external deficits and surpluses across euro area countries reflected not only growth differentials, but also rising competitiveness imbalances, particularly measured by unit labour costs. This posed a challenge when cross-border funding dried up and the imbalances could no longer be financed easily from the rest of the area.*

*The growing unit labour cost gap indeed pointed at cumulative wage growth in excess of what could be supported by productivity gains, accordingly putting downward pressures on business margins that deteriorated in the external deficit countries. These trends have been partially reversed in recent times in some external deficit countries, notably those under an EU/IMF programme or under stress, with some further unwinding of imbalances in 2012.*

### I INTRODUCTION

The traditional approach to international finance analysis, which uses balance of payments current account data to measure imbalances across countries, can be enhanced by looking at sectoral accounts data (“flow-of-funds” data), which show the contributions of the various domestic sectors to the external deficit/surplus. Using the euro area sectoral accounts (EAA), Chart 42.1 breaks down the euro area external balance into the deficits and surpluses (i.e. the net financial balances, or net lending/net borrowing)<sup>39</sup> of households, non-financial corporations (NFCs), financial corporations and government sectors. Chart 42.1 illustrates that the 2006-08 boom was characterised in the euro area by a strong increase in private sector net borrowing (mostly NFCs), which was then rapidly reversed in 2008-10. This reversal found a counterpart in a considerable increase in net borrowing of the government sector, in the absence of any significant improvement in the euro area external balance. In recent quarters, the external balance of the euro area improved, turning positive, reflecting a renewed swing into surplus by corporations and lower government deficits.

However, these developments at euro area level mask developments within the area. In particular, one may ask whether the financial balances described above might reflect a significant “home bias” (with, for example, deficits in some sectors in a given country being financed by surpluses in other sectors resident in the same country).

38 This Special Feature was prepared by: Ph. de Rougemont, D. Sondermann and B. Pierluigi.

39 The net lending/net borrowing, or financial surplus/deficit, of a sector is the balance of its capital account and measures the excess of saving and net capital transfers received over capital investments (net lending), or vice versa (net borrowing). It is also the difference between the revenue and expenditure of each sector. It is also the balance of the financial accounts of the sector, which measures the difference between transactions in financial assets and transactions in liabilities. See, for instance, Box 1 “Concepts used in sectoral accounts” in the article entitled “The financial crisis in the light of the euro area accounts: a flow-of-funds perspective” in the October 2011 issue of the ECB’s Monthly Bulletin.

In a seminal paper, Feldstein and Horioka found that national investment and savings tended to be highly correlated across countries, and interpreted this as evidence that world capital markets were not well integrated (the “Feldstein-Horioka puzzle”). To explain this, they hypothesised that portfolio preferences and institutional rigidities impede long-term capital flows, while noting that short-term capital mobility would be much less affected though, as revealed by the fact that short-term covered interest rate differentials were negligible.<sup>40</sup> Along these lines of reasoning, the patterns of financial deficits and surpluses, across countries and sectors within the euro area (as compiled in the sectoral accounts), can shed light on the degree of financial integration. An alternative source of information (also stemming from the sectoral accounts) that can be usefully analysed is the flows of cross-border financing. Their drying up after Lehman pointed to a decline in financial market integration, an issue that was highlighted in the 2012 Financial Integration Report Special Feature E, and is not presented again in this Special Feature.

In order to examine this issue, Section 2 follows the approach used in the 2012 Financial Integration Report<sup>41</sup> which consists of dividing countries of the euro area, for illustrative purposes, into “surplus countries” (countries predominantly running current account surpluses before the crisis, in the five-year period up to 2007, i.e. Belgium, Germany, Luxembourg, the Netherlands, Austria and Finland) and “deficit countries” (Ireland, Estonia, Greece, Spain, France, Italy, Cyprus, Malta, Portugal,

40 See: Feldstein, M.S. and Horioka, C.Y. (1980), “Domestic saving and international capital flows”, *Economic Journal*, Vol. 90, pp. 314-329.

41 See Special Feature E “Sectoral balances and euro area financial integration” in the ECB’s 2012 Financial Integration Report.

Chart 42 Euro area net lending/net borrowing

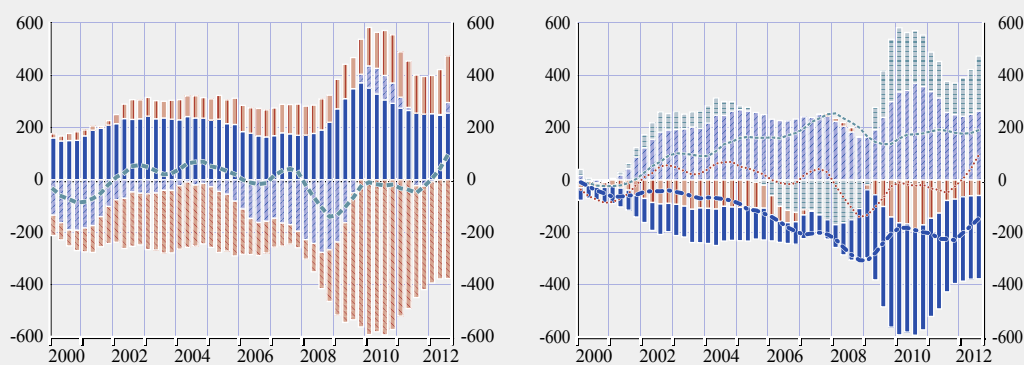
(four-quarter sums; EUR billions)

1. By sector

- households
- financial corporations
- euro area
- non-financial corporations
- government

2. By country grouping for the public and private sectors

- government of external deficit group
- government of external surplus group
- private sector of external deficit group
- private sector of external surplus group
- euro area
- surplus group
- deficit group



Sources: Eurostat and ECB.

Note: The net lending(+)/net borrowing(-) shown in the charts of this box has been adjusted, for convenience, so as to exclude “acquisitions less disposals of non-financial non-produced assets” (in order to avoid the distortions caused by the large proceeds from the sale of UMTS mobile phone licences in 2000).

Slovakia and Slovenia).<sup>42</sup> Subsections focus on the sectoral deficit/surplus differentials between surplus and deficit countries, on the distinction between savings/investment differentials, and on corporate margins.<sup>43</sup> Section 3 looks at the countries in detail to determine the extent to which the imbalances previously identified have been corrected.

## 2 REGIONAL ANALYSIS OF SECTORAL ACCOUNTS

### 2.1 SECTORAL AND GEOGRAPHIC IMBALANCES

Chart 42.2 shows the financial balances of the two country groupings defined above, distinguishing between government sector and private sector balances.<sup>44</sup> The green and blue dashed lines show external balances for each grouping (broadly corresponding to the current account surplus for each group). The red dashed line shows the total euro area external balance, as in Chart 42.1.

In the boom period that preceded the most acute phase of the financial crisis and was characterised by solid growth and wide macro imbalances in the euro area, increasing negative balances in the deficit countries, largely driven by the private sector in some of those countries, were matched by strongly positive net private sector balances in the surplus countries. This finding could be consistent with increased capital market integration<sup>45</sup> and suggests that, during that period, a marked (and unsustainable) economic expansion in the deficit group was increasingly being financed by savings originating in the surplus group. This is confirmed by a separate analysis on gross financial transactions (see the 2012 Financial Integration Report, in particular Chart 63).<sup>46</sup> At the same time, this could also be evidence of unsustainable “regional” booms facilitated by interest rates gradually falling, owing to arbitrage, towards the average interest rate in the EMU, which with insight proved excessively low for domestic conditions prevalent then in deficit countries. In such a case, one may expect capital flows from surplus countries (with still below EMU average interest rate) to deficit countries (with still higher than average interest rate). In this context, these developments could thus also reflect the adverse impact of “regional” demand booms and supply rigidities on competitiveness in a context of insufficiently integrated labour and goods markets.

After 2008 the financial deficits of the private sectors of the deficit countries sharply turned into surpluses, accompanied by higher surpluses in the surplus countries, albeit to a lesser extent, and matched by higher government deficits across the board. On the one hand, this points to an ongoing adjustment process, with increased saving and deleveraging in the private sector adversely impacting on government accounts, particularly in the external deficit countries, in a context of impaired competitiveness. Impaired competitiveness limits the ability to offset the adverse impact

42 Each grouping is in fact rather heterogeneous in itself, comprising countries with very large external deficits or surpluses and others with nearly balanced current account positions. In addition, the countries differ considerably in other respects, such as the fiscal position or the presence of specific boom-bust cycles. Obviously, the composition of the group is closely tied to the reference period and would change over time. Germany, for instance, would have been in the “external deficit group” if the exercise had been conducted in earlier years, while Italy and France would have been in the surplus group.

43 See the box entitled “A sectoral account perspective of imbalances in the euro area” in the February 2012 issue of the ECB’s Monthly Bulletin.

44 Private sector is defined here as the sum of all sectors other than the government sector.

45 For instance, Blanchard, O.J. and Giavazzi, F. suggested that such a process was at work in the case of Portugal and Greece in “Current Account Deficits in the Euro Area: The End of the Feldstein-Horioka Puzzle?” in Perry, G. and Brainard, W. (eds.), *Brookings Papers on Economic Activity*, September 2002. Later on, Blanchard (2007) interpreted the considerable net borrowing as a sign of unsustainable boom in “Adjustment in the euro area. The difficult case of Portugal”, *Portuguese Economic Journal*, 6.

46 See Special Feature E “Sectoral balances and euro area financial integration” in the ECB’s 2012 Financial Integration Report.



of deleveraging on domestic demand by increasing demand from non-residents. On the other hand, it can also be interpreted as a sign of a drying up of cross-border financing (as documented in the 2012 Financial Integration Report Special Feature E), with an accompanying decline in financial market integration, as suggested by other indicators discussed in this report. At the euro area level, in the absence of an improvement in the external balance (the solid central dashed line in Chart 42), the counterpart to mounting private sector surpluses was rising government deficits, in particular in the deficit countries, as a manifestation of the “paradox of thrift”.<sup>47</sup>

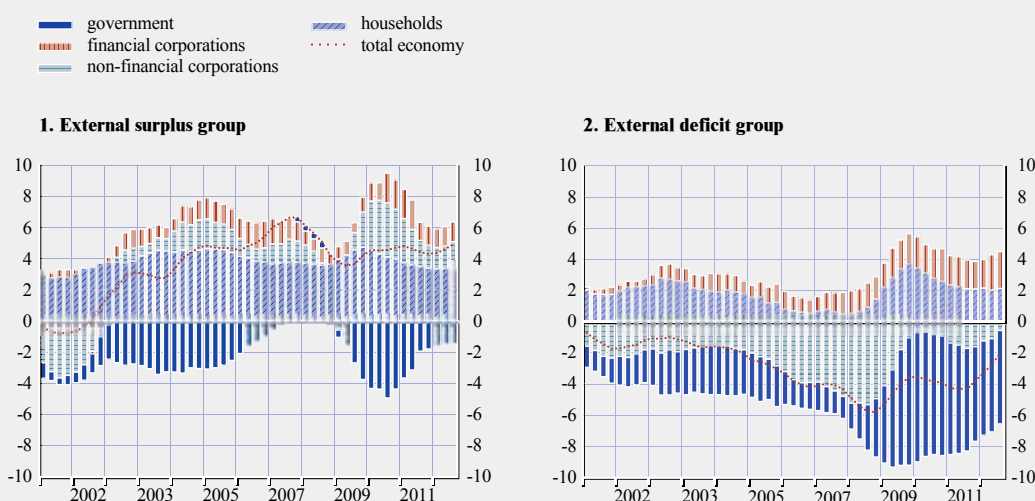
In more recent quarters, the euro area external balance turned into a surplus, an improvement resulting mainly from developments in deficit countries, primarily reflecting falling activity and increasing surpluses in the private sector (and to a lesser extent reduced government deficits). The external balance of the surplus countries hardly changed, perhaps as a result of a relatively tight macroeconomic policy stance.

A more detailed sectoral decomposition of the differences in private sector balances between the two country groupings can be seen in Chart 43 (here expressed in percentage of GDP). Overall, the heterogeneity between country groupings seems most pronounced in the case of NFCs. Whereas the NFCs in the external deficit group maintained a traditional net borrowing position throughout the period, those in the external surplus group experienced atypical, long-lasting net lending positions beginning in 2003, positions of the kind that can be observed during recessions or that in principle can be associated with strong foreign direct investment abroad. However, these net lending positions were in practice more balanced by loans abroad (interbank) or portfolio investments.

47 It should be noted that this fundamental accounting constraint does not, in itself, indicate the direction of causality, i.e. whether the government deficits resulted from increased private surpluses/saving or, alternatively, whether the latter reacted to increased government deficits.

Chart 43 Net lending/net borrowing by country grouping

(four-quarter sums; percentages of GDP)



Sources: Eurostat and ECB.

Note: The net lending(+)/net borrowing(-) shown in the charts of this box has been adjusted, for convenience, so as to exclude “acquisitions less disposals of non-financial non-produced assets” (in order to avoid the distortions caused by the large proceeds from the sale of UMTS mobile phone licences in 2000).

The expansionary financial balances of NFCs turned around earlier in the external deficit group than in the external surplus group. More recently, the significant improvement observed in the external balance of the external deficit group mostly reflects lower deficits of NFCs as well as increasing surpluses in the financial sector (engaged in balance sheet repair) and more limited contributions from the government and household sectors.

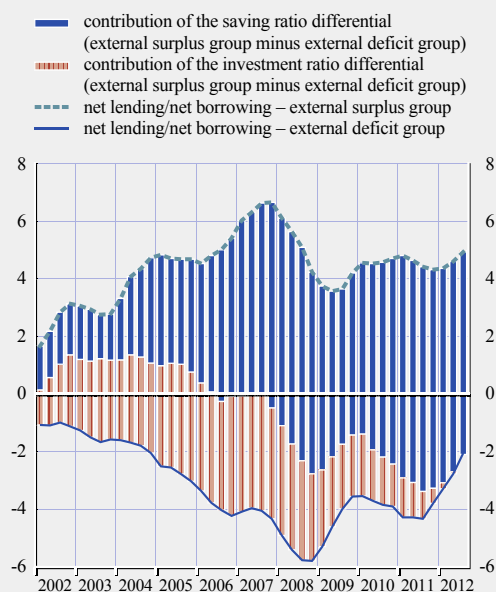
## 2.2 SAVING AND INVESTMENT

Further useful insight can be gained from the analysis of sectoral surpluses/deficits by looking at the dynamics of the two main components of net lending/net borrowing separately, namely investment (gross capital formation) and saving (including net capital transfers). Chart 44 shows the dynamics of the differentials between country groups in both the saving ratios (i.e. the ratio of domestic saving to GDP in the external surplus group minus that in the external deficit group) and the investment ratios, as well as their contribution to explaining the dynamics of the external balances gap between the external surplus and external deficit groups. As can be seen from the chart, the gradual and ultimately substantial increase in the gap in external balances prior to the recession of 2008 was driven largely by increasing domestic saving differentials. It also reflected, though to a lesser extent, increasing investment differentials, through ever higher investment ratios in the external deficit group (Spain, Ireland), possibly pointing at inefficiently low investment in external surplus countries.

Later on, in the post-Lehman period, the prevalence of the saving differentials as the main driver of the external balance differential was further reinforced. The investment differentials have disappeared altogether in recent quarters. The observed reduction in the external balance differential between the two groupings is thus a combination of reductions in the investment differential (falling external deficit group investment rates) and in the savings differential. Finding attractive domestic use for domestic

**Chart 44 Differentials between the external surplus group and the external deficit group in saving and investment ratios**

(four-quarter sums; percentages of GDP)

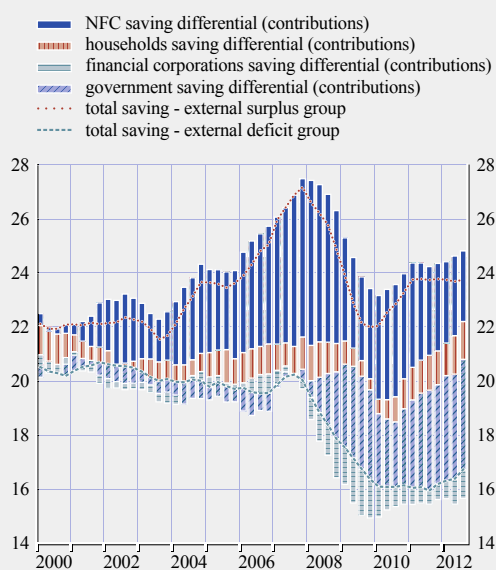


Sources: Eurostat and ECB.

Note: The saving ratio differential includes net capital transfers.

**Chart 45 Differentials between the external surplus group and the external deficit group in sectoral saving ratios**

(four-quarter sums; percentages of GDP)



Sources: Eurostat and ECB.

Note: Negative sectoral differentials (i.e. high saving ratios in the external deficit group) lead to entries below the line for "total saving - external deficit group".

surpluses in external surplus countries could contribute to speeding up unwinding regional macro imbalance in the euro area.

Chart 45 sheds light on the origin of the rapid expansion of the saving differentials between the two country groupings until 2007, arising from mildly falling saving ratios in the external deficit group in stark contrast to the pronounced increase in the external surplus group. Chart 45 also shows the sectoral contributions to the saving ratio differentials. The divergence of saving behaviour in the country groupings originated largely in the NFC sector, where the saving differentials rose until 2008.<sup>48</sup> During the recession of 2008-09, the NFC saving differentials decreased to some extent, though remaining still very large in mid-2012. While there were only few divergences in government savings between the two country groupings before 2007, they became notable thereafter. During the recession, government saving fell faster and more steeply in the external deficit group, and this drift was not corrected, but instead compounded by the stronger rebound since mid-2010 in government savings in the external surplus group (where gross saving again turned positive in the 12 months to the second quarter of 2011).

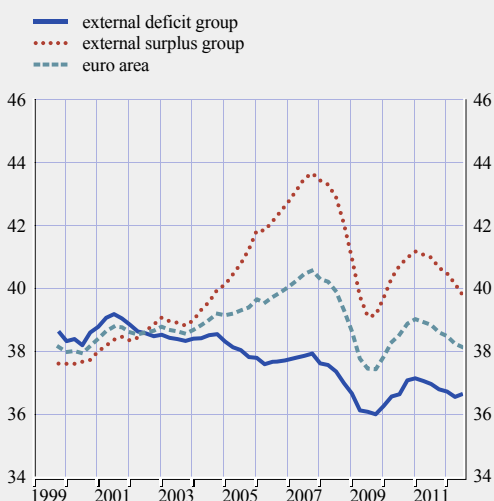
### 2.3 CORPORATE MARGINS AND WAGE LEVELS

One of the reasons for the decline in retained earnings and the associated high deficit position of NFCs in the external deficit group is their lower profitability, as measured here by the gross operating surplus to value added ratio ('business margins' – see Chart 46). These margins had been at similar levels of around 38% in the two country groupings until 2004, but started to diverge thereafter: increasing by close to 5 points to a maximum of 43.7% at the end of 2007 in the external surplus group, while somewhat declining in the external deficit group. This opened up a gap of

<sup>48</sup> This uncovered opposing dynamics: the ratios of NFC saving to GDP in the external surplus group increased persistently throughout the five years to 2008, while at the same time they edged down steadily in the external deficit group.

**Chart 46 Ratio of gross operating surplus to value added of NFCs**

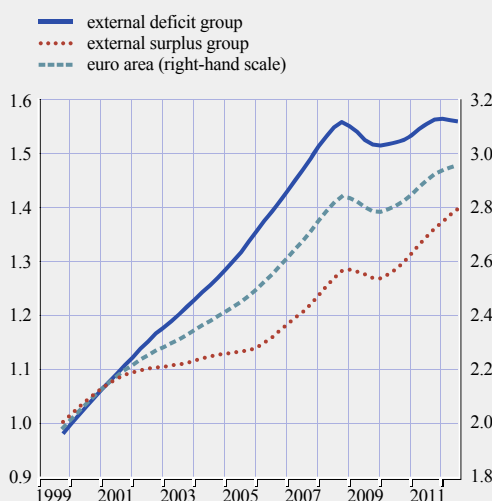
(four-quarter averages; percentages)



Sources: Eurostat and ECB.

**Chart 47 Compensation of employees paid by NFCs**

(four-quarter sums; EUR trillions)



Sources: Eurostat and ECB.

almost 6 percentage points, which narrowed temporarily during the 2008-09 recession, but started to widen again during the subsequent recovery. More recently, the gaps have narrowed somewhat, as business margins in the external surplus group tended to fall slightly faster than in the external deficit group amidst the slowdown in activity. However, as of the third quarter of 2012, NFC margins remain generally depressed in the external deficit group, standing 3.1 percentage points lower than in the external surplus group.

One of the main reasons for the lower corporate margins of the external deficit group compared to the external surplus group is to be found in the far larger increase in wages paid by businesses in the period from 2000 to 2010 in the former group than in the latter (see Chart 47), an increase over and beyond what would have been justified by stronger output growth (both higher productivity and employment gains) in those countries. Indeed, changes in total compensation of employees can be exactly decomposed (by definition) into output growth in volume terms and changes in unit labour costs (ULC).

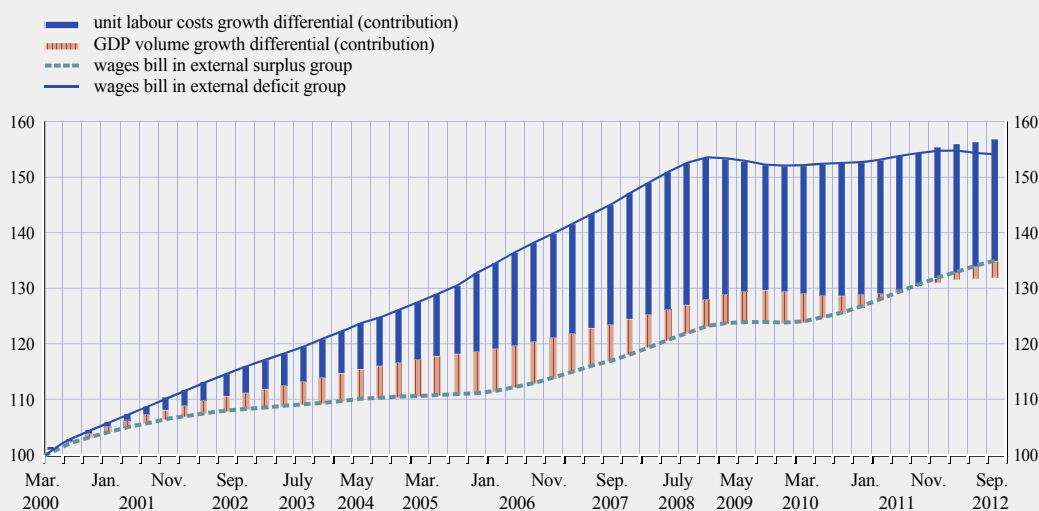
## 2.4 FROM COMPENSATION OF EMPLOYEES TO UNIT LABOUR COSTS

Chart 48 decomposes the evolution of the gap in compensation of employees between the external surplus group and the external deficit group (seen in the previous section) into a volume of activity component and a ULC component. This is done in this section for the whole economy, rather than only for NFCs, in the absence of volume indicators for NFC value added. Looking at the whole economy may distort results, as developments in public wages can be significantly different from private wages. If the latter impacts directly on cost competitiveness, the former still impacts on it, though indirectly (e.g. forcing increases in taxes to fund government expenditure).

In the external deficit group, ULC rose by 28% in the ten years to 2010, compared with an increase of less than 11% in the external surplus group. This gap reflects wage growth in the external deficit group over the past ten years that exceeded that in the external surplus group by a large margin,

**Chart 48 Index of compensation of employees (total economy) in the two country groupings, and the contributions of volume growth and ULC changes to the evolution of the gap**

(index: March 2000 = 100)



Sources: Eurostat and ECB.

leading to a loss of cost competitiveness. This in turn somewhat compressed corporate margins in the external deficit group, as businesses could not pass on all the cost increases in full, especially in the case of exposed tradable goods and services.<sup>49</sup> This macro perspective could be refined by looking more specifically at the tradable goods, or at exporting firms (which typically have higher productivity than the other firms).

Since 2010, the differential in the wage bill reduced somewhat between the two groups, reflecting to a large extent a differential in economic growth as well as some reduction in ULC differentials. This aggregate picture for the two country groupings, however, conceals significant differences among external deficit countries, as the next section shows.

### 3 REBALANCING OF PRICE/COST COMPETITIVENESS IN EURO AREA COUNTRIES

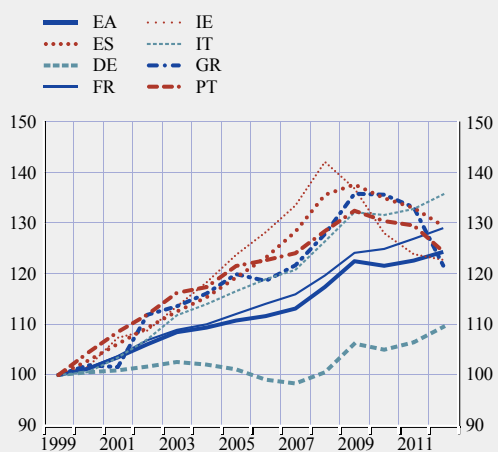
As stressed in the previous section, euro area countries have witnessed growing labour cost differentials since the inception of Economic and Monetary Union (Chart 49). These differentials were related, in the deficit countries, to the accumulation of domestic imbalances and corresponding excessive wage growth, but also to persistent weakness in productivity and trend growth.<sup>50</sup>

Since 2008 a price/cost competitiveness adjustment<sup>51</sup> process has been underway in the external deficit countries that had accumulated significant imbalances. This is reflected in falling ULC, particularly in the euro area countries under a full EU/IMF-programme (i.e. Greece, Ireland and Portugal), and to a lesser extent Spain. However, up until 2011 the adjustment was mainly achieved via significant labour shedding, rather than via a significant reduction in wages, while unit labour costs have continued to rise in France and Italy.

The unwinding of macroeconomic imbalances in the euro area continued in 2012.<sup>52</sup> Most of the euro area countries that had experienced excessive domestic demand and substantial losses in price and cost competitiveness prior to the inception of the crisis have improved their

Chart 49 Unit labour costs (total economy)

(index: 1999 = 100)



Source: European Commission, 2012: forecast.

49 Even if the higher nominal wage increases in the external deficit group reflected, merely or mostly, higher domestic inflation, this nonetheless caused a deterioration in competitiveness and thus additional pressures on the margins of businesses exposed to international competitors (including those in the other grouping of the euro area).

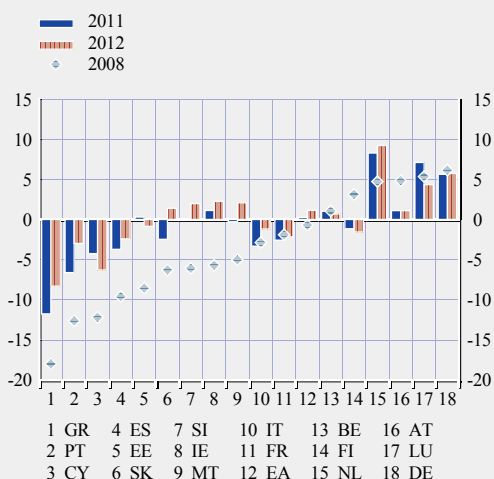
50 In a number of countries, the change in ULC over 1999-2008 may present a distorted picture owing to a number of factors: (1) mere composition effects, such as change in employment encompassing less productive workers or sectors (less educated workers, construction), as unemployment rate fell to very low levels; (2) the starting point of 1999 may have been of high competitiveness; (3) transfer pricing that may distort data; (4) increased intermediated inputs (via off-shoring).

51 Non-price competitiveness is also important for assessing overall competitiveness, such as taking into account quality (when not included in hedonic adjustments in national accounts), increases in varieties, among other factors.

52 European Commission forecast for 2012.

**Chart 50 Current account balance**

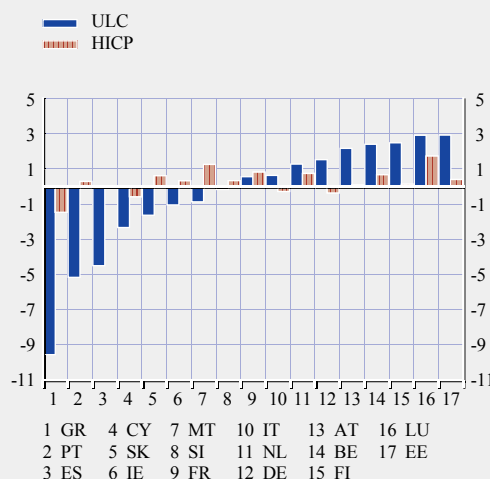
(percentage points of GDP)



Source: European Commission, 2012: forecast.  
Note: Countries are arranged in ascending order of the current account balance in 2008.

**Chart 51 HICP inflation and ULC growth in 2012**

(percentage points above or below the euro area average)



Source: European Commission, 2012: forecast.  
Note: Countries are arranged in ascending order of the change in ULC.

current account balance further since the end of 2011 (Chart 50). The euro area countries under a full EU/IMF-programme or under stress managed to further reduce their deficit positions in 2012, following already substantial improvements in 2007-2011. While domestic demand contraction continued to play an important role in this adjustment, there are also signs that competitiveness gains have contributed to this, as exports have held up relatively well in some countries in view of the weakening of external demand. This may reflect the further improvement in cost competitiveness in most of these countries, as ULC growth remained below the euro area average (Chart 51). In the countries which entered the crisis with a current account surplus, there was less variation in their external account, implying that the euro area as whole now has a current account surplus. Moreover, at the same time most of the surplus countries (e.g. Finland, Austria and Luxembourg) experienced inflation rates above the euro area average.

As in previous years, the gains in cost competitiveness in 2012 reflect not only adjustments in relative wages, but in some cases also significant contributions from productivity gains (Chart 52). The breakdown of productivity growth (Chart 53) indicates that in many cases these productivity gains were the result of significant labour shedding and that in some cases (particularly in Spain, Greece, Cyprus and Portugal) the decline in output growth was exceeded by the strong downward adjustment in employment rates.<sup>53</sup> This resulted in further increases in unemployment rates, particularly among younger workers.

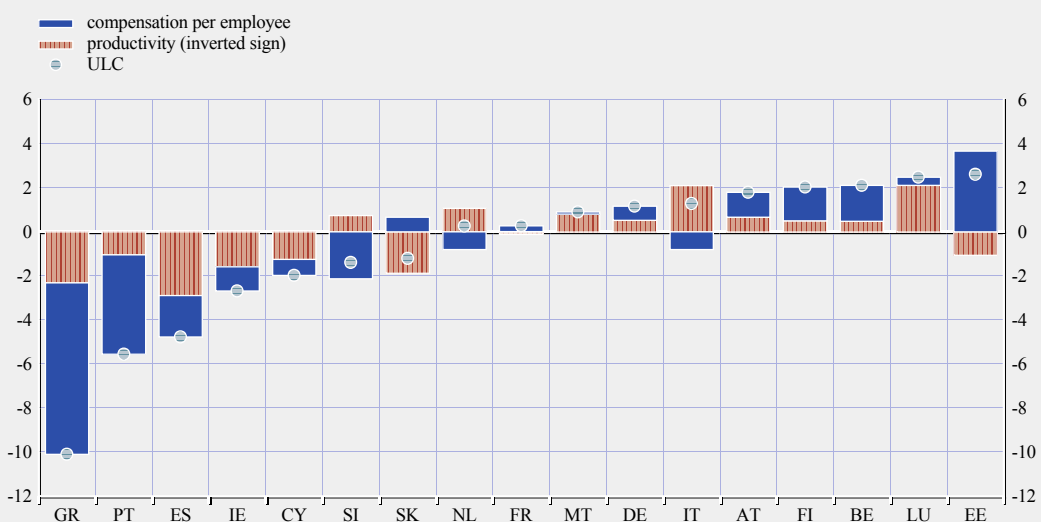
The lower relative wage growth in several countries may have been facilitated by reforms aimed at increasing the flexibility of labour markets.<sup>54</sup> Notable progress has been made on that front,

53 A more extensive analysis would usefully encompass an analysis of total factor productivity.

54 Significant labour market reforms have been implemented during 2011 and 2012 in Greece, Spain, Portugal. Moreover, minimum wage cuts in Greece and freeze in Portugal, the suspension of automatic indexation in Spain have contributed to moderate wage developments in the private sector.

Chart 52 Change in ULC and components between 2011 and 2012

(relative to the euro area average; percentage points)



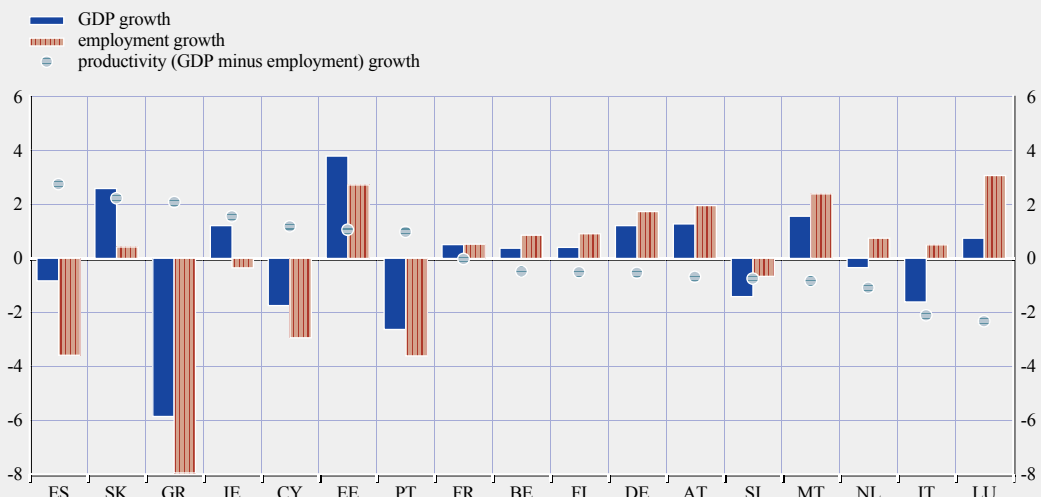
Source: European Commission, 2012; forecast.

Note: Countries are arranged in ascending order of the change in the ULC in 2012.

in particular in some countries with relatively low levels of labour market flexibility, which in many cases are also the countries facing the largest adjustment needs. This has allowed the cyclical compression of domestic demand to hold down wage growth. As some of the reforms taken within the year will only take full effect with some lag, further adjustment may be expected going forward.

Chart 53 Productivity growth and contributions from GDP and employment between 2011 and 2012

(relative to the euro area average; percentage points)



Source: European Commission, 2012; forecast.

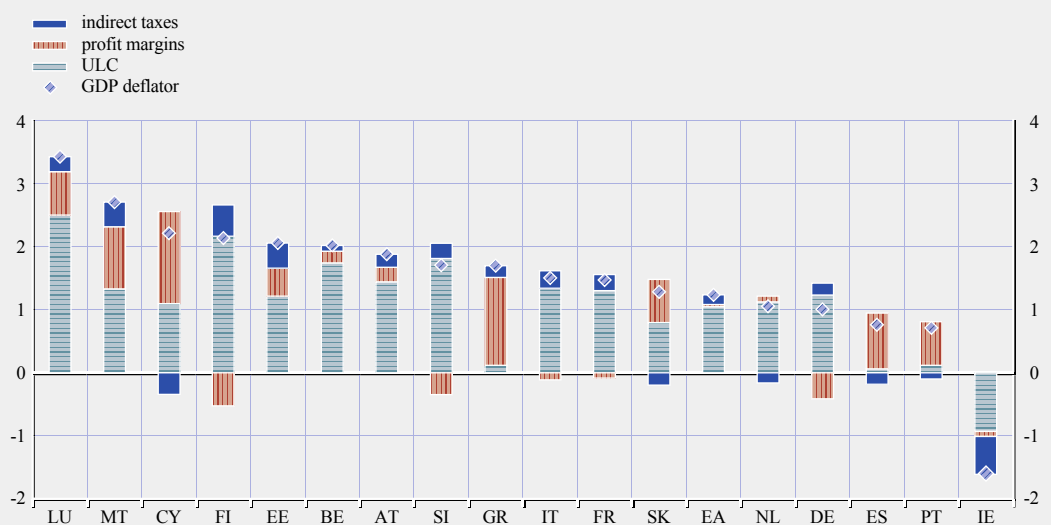
Note: Countries are arranged in descending order of productivity growth.

Despite the adjustments seen in relative ULC growth, the overall price adjustment has been much less pronounced in 2012 (Chart 51). This can be attributed partly to the countries' fiscal consolidation efforts, which involved increasing indirect taxes and administered prices, thereby exerting upward pressure on prices. In addition, the limited price adjustment may also reflect simultaneous increases in profit margins in selected external deficit countries, although not France, Italy, Ireland or Slovenia (Chart 54). The interpretation of the current dynamics of profit margins (mark-ups) requires a degree of caution (apart from the usual statistical caveats), given that in the 2008-09 crisis, euro area countries, especially those currently adjusting past imbalances, witnessed a significant contraction in their profit margins on the back of very resilient wage dynamics. This implies that some euro area countries are still experiencing a partial rebound of their profit margins from earlier troughs. Moreover, composition effects (e.g. only profitable firms have been able to survive the crisis) and capital deepening (via labour shedding and an increase in the cost of capital vis-à-vis wage costs) might also explain the current recovery in profit margins. However, the current rise in profit margins in some countries (if confirmed) could also reflect a lack of competition in certain sectors of the economy, allowing firms to earn excessive rents as they are not forced through competition to pass on the improvements in labour costs to final prices. Product market reforms strengthening competition would in this case be particularly important.

It should also be noted that amongst the countries that witnessed the largest increase in mark-up after the 2008 crisis, some nonetheless suffered from low rates of return on invested capital, below the euro area average in the case of Greece and Portugal. Rates of return are closer proxy to measure the actual profitability of firms – and the possible existence of economic rents – than mark-ups. In addition, other factors than lack of competition in sheltered sectors can drive the evolution of total-economy mark-ups, such as particularly high uncertainty for business prospects due to political and social developments, drastic increases in financial costs, as well as pronounced financial constraints.

**Chart 54 Contribution to the GDP deflator from ULC, profit margins and taxes**

(average annual percentage growth 2008-2012)



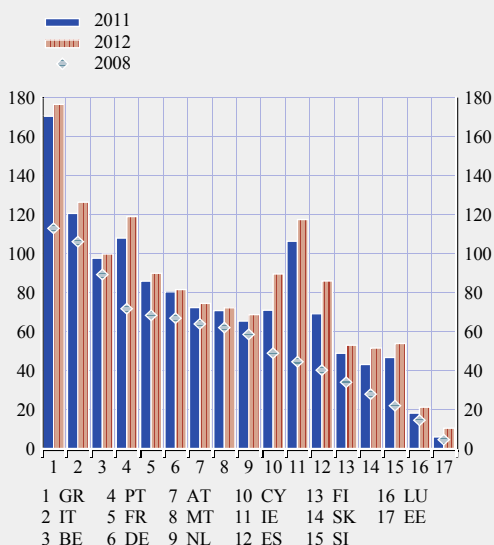
Source: European Commission, 2012: forecast.

Note: The impact of indirect taxes does not only reflect the influence of tax legislation but also of taxes basis (e.g. with some results driven in some countries by the housing boom reversal). Countries are arranged in descending order of the change in the GDP deflator.



Chart 55 Government debt

(in percentage points of GDP)

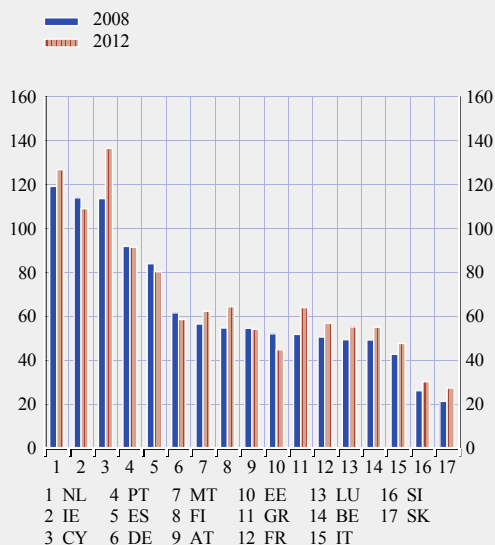


Source: Eurostat.

Note: Countries are arranged in descending order of public debt in 2008.

Chart 56 Households debt

(in percentage points of GDP)



Source: Eurostat. Latest data refer to 2012Q3.

Note: Countries are arranged in descending order of households debt in 2008.

Budget balances in most euro area countries improved in 2012, but by less than the consolidation effort alone would suggest. In fact, in most cases the structural and primary improvement is partly offset by adverse cyclical developments and increasing interest payments. The fact that several euro area countries had to engage simultaneously in fiscal consolidation could have exacerbated adverse cyclical developments.

The general government debt-to-GDP ratio has further increased in most countries (Chart 55), partly owing to running deficits, but also owing to the support extended to other euro area countries in the context of the European Financial Stability Facility (EFSF).

Overall, while some indicators, such as the current account balance and cost and price indicators, suggest that the unwinding of macroeconomic imbalances is continuing, a number of stock variables, such as public (Chart 55) and private sector debt (Chart 56) or net external debt, suggest that substantial vulnerabilities still exist in several euro area countries. This implies a need for significant further adjustment and confirms the necessity of further fiscal restraint. Still it appears that the improvement is overall not only cyclical but also, to some extent, structural in nature, hence supporting sustainability. Substantial reforms to enhance the flexibility of labour and product markets are now starting to contribute to the adjustment. The gains in relative cost competitiveness realised in recent years are not enough to offset the substantial losses in cost competitiveness built up from 2000 to 2008. Looking forward, while the trend towards subsiding imbalances in euro area countries which started in 2008 continued in 2012, further adjustment remains necessary. Indeed, aside from returning to current account equilibrium ('flow adjustment' discussed above), for some countries in the deficit group that have to reduce their accumulated external liabilities ('stock adjustment'), even a full compensation of these losses will not be enough, because they must generate significant current account surpluses over a prolonged period.

## D. US MONEY MARKETS: STRUCTURAL COMPARISON AND IMPLICATIONS FOR FINANCIAL INTEGRATION<sup>55</sup>

*US money market integration would be expected to be much greater than that of the euro area, given that there is one national system, compared with 17 in the euro area, and considering that US markets have been established for a much longer time. However, there are certain aspects of the US money market – attributable to a complex financial system – that point to some areas where markets may not be fully integrated.<sup>56</sup> While most money market participants in the euro area are banks, US money market participants are very diverse, with different incentives, regulations and constraints. These differences can have different implications for interest rates or market access – especially in times of stress. For example, the non-traditional (shadow) banking system is much larger in the United States than in the euro area. This is an important feature because of the segmentation evident among bank and non-bank entities in areas such as deposit insurance and access to central bank liquidity.*

*As in the euro area, the financial crisis revealed some evidence of a lack of integration in money market pricing in the United States. In the euro area, this lack of integration appeared in a geographical sense, while in the US, it relates to the nature of the institutions and manifested itself in diverging developments across financial market segments. The massive policy response by the US Federal Government and the Federal Reserve System to stabilise the financial system also served to re-integrate money market activity. Similarly, euro area money market segmentation appears to be reducing following recent non-standard ECB policy measures.<sup>57</sup> In the United States, policy responses, coupled with additional regulatory changes, continue to have implications for money market integration.*

*In addition, certain market segments, such as money market mutual funds and the US repurchase agreement (repo) infrastructure were revealed to have weaknesses that may heighten dis-integration in times of stress. Reform efforts continue to address these concerns.*

## I INTRODUCTION

This Special Feature discusses financial integration within US money markets with a focus on key structural differences from the euro area and implications for money markets and policy. The Special Feature is organised as follows: Section 2 introduces the major US market participants and Section 3 introduces the major policy and regulatory dynamics. This sets the stage for the evolution of money market dynamics discussed in Section 4, which is divided into unsecured and secured money markets. Section 5 concludes.

<sup>55</sup> This Special Feature was prepared by: J. Pollinger, A. Corvatta and I. Frechard.

<sup>56</sup> The market for a given financial instrument is considered fully integrated if all economic agents with the same relevant characteristics acting in that market face a single set of rules, have equal access and are treated equally.

<sup>57</sup> See the Special Feature entitled “Euro area money market segmentation in the present low interest rate environment” in this report.

## 2 OVERVIEW OF US FINANCIAL SYSTEM STRUCTURE

### BANKS

Nearly all US banking assets are controlled by bank holding companies, i.e. corporations which control one or more banks.<sup>58</sup> US bank holding companies own more than USD 15 trillion in total assets, which span across entity types. Bank holding companies comprise more than 90% of the assets of the top 30 brokers and dealers and approximately 40% of the assets of money market mutual funds (henceforth, money market funds) and the top 20 insurance companies.<sup>59</sup>

Assets held in non-bank subsidiaries account for a growing share of total bank holding company assets, with around 30% of aggregate banking industry assets currently held by non-bank subsidiaries.<sup>60</sup> Borrowing costs may vary significantly among different subsidiaries of the same holding company, especially when comparing bank and non-bank subsidiaries, reflecting frictions in a bank's ability to transfer funds internally. Regulation limits the flow of funds and capital across subsidiaries. For example, regulations require a bank holding company to act as a "source of strength" for its commercial banking subsidiaries, but limit the extent to which a banking subsidiary can support non-banking subsidiaries.<sup>61</sup>

**Domestic banks** can be divided into larger money centre banks, funded by both deposits and capital market activities, and smaller regional and community lenders with larger deposit bases relative to total liabilities. Banks and savings institutions, regardless of size, have part of their deposits – particularly retail deposits – insured by the Federal Deposit Insurance Corporation (FDIC).<sup>62</sup> Depository institutions also have access to central bank liquidity through the Federal Reserve System's discount window.

By contrast, non-bank **broker-dealers** rely on capital markets for their funding and do not have access to central bank liquidity. However, the largest broker-dealers set up bank holding companies during the financial crisis to obtain such access. In general, broker-dealer models were – and remain – heavily dependent on activities such as repos. Among the set of banks and broker-dealers are Federal Reserve-designated **primary dealers**, which are authorised to trade directly with the Federal Reserve and are subject to significant requirements and obligations.<sup>63</sup> There are currently 21 primary dealers. This implies a different market structure from the euro area. In the United States there is a tiered system in which certain financial institutions – the primary dealers – have access to Federal Reserve operations, while other financial institutions rely on the primary dealers for the distribution of central bank liquidity. In the euro area all monetary financial institutions can have direct access to Eurosystem open market operations and standing facilities.

58 Typically, a large US parent bank holding company will own a number of domestic bank subsidiaries engaged in lending and deposit-taking as well as non-banking and foreign subsidiaries engaged in a broader range of business activities. See Avharam, D., Selvaggi, P. and Vickery, J. (2012), "A Structural View of U.S. Bank Holding Companies", *FRBNY Economic Policy Review*, Federal Reserve Bank of New York.

59 Cetorelli, N. (2012), "A Principle for Forward-Looking Monitoring of Financial Intermediation: Follow the Banks!", *Liberty Street Economics Blog*, Federal Reserve Bank of New York.

60 Avharam, Selvaggi and Vickery (2012), *op. cit.*, highlight the trend in recent decades towards enlarging the scope of bank holding company activities. However, they note that recent legislation (Volcker, Dodd-Frank) prohibits bank holding companies from engaging in proprietary trading and limits investments in other areas, such as hedge funds.

61 McAndrews, J. (2009), "Segmentation in the U.S. Dollar Money Markets During the Financial Crisis", Federal Reserve Bank of New York.

62 The National Credit Union Administration insures deposits at credit unions.

63 Current primary dealers are listed on the website of the Federal Reserve Bank of New York at [http://www.newyorkfed.org/markets/pridealers\\_current.html](http://www.newyorkfed.org/markets/pridealers_current.html).

In addition to US domestic banks, **foreign banks** are large wholesale market borrowers and have an important presence in the United States. The US branches and agencies or non-bank subsidiaries of foreign banking organisations (FBOs) account for close to USD 2 trillion of banking assets, representing 15% of total banking assets.<sup>64</sup> FBOs can access the Federal Reserve System's discount window. However, most FBOs are not allowed to offer retail deposits insured by the FDIC. Instead, the most important sources of funding for FBOs are large time deposits and market borrowings, including repos and commercial paper (CP). Market borrowings are more important for FBOs (32% of total liabilities) than for domestic banks (10% of total liabilities).<sup>65</sup> For both domestic banks and FBOs, more than 90% of market borrowings are supplied by non-bank entities.

The banking sector has experienced increased differentiation in terms of both long and short-term ratings. Changes in counterparty credit risk represent a normal market dynamic and need not signal a lack of integration, although increased counterparty credit differentiation can lead to a reduction in the volume of money market supplied funding (as lenders are more hesitant to extend funding) and price (as the set of active market participants becomes more distilled towards higher-quality names).

Deregulation of restrictions on interstate banking and branching in the US from the late-1970s to the mid-1990s led to a substantially more integrated national banking system as measured by the share of the banking system held by banks from other states.<sup>66</sup> Recent IMF analysis highlights that the share of the banking system held by banks from other states is much higher than similar cross-country holdings in the euro area.<sup>67</sup>

Just as TARGET2, the Eurosystem's interbank settlement and payment system, reflects developments among national central bank balances in the euro area, the Federal Reserve's Interdistrict Settlement Account data reflect developments among the twelve regional Federal Reserve Bank districts that make up the Federal Reserve System. Interdistrict settlement balances rose considerably during the financial crisis, in some cases reaching magnitudes similar to TARGET2 balances.<sup>68</sup>

Financial institutions are distributed differently among districts; for example, the second district includes New York, where many of the largest domestic banks and FBOs are located, and liquidity operations are carried out by the Federal Reserve Bank of New York. Balances are settled on a lagged basis once per year, through an adjustment of the relative shares of the System Open Market Account of the Federal Reserve System.<sup>69</sup>

Overall, traditional banking entities in the United States represent a smaller share of the total financial system than in the euro area, where banks continue to be the main financial intermediaries (see Table 2).

64 Federal Reserve H.8 Release, reported in the Office of Financial Research 2012 Annual Report.

65 Federal Reserve H.8 Release.

66 Morgan, D., Rime, B., and Strahan, P. (2003), "Bank Integration and State Business Cycles", National Bureau of Economic Research Working Paper 9704. The authors find that the share of integrated bank assets increased from around 10 percent in 1976 prior to state-level deregulation to around 60 percent of a state's banking assets in 1994 when interstate banking was federally mandated.

67 Laeven, L. and Tressel, T. (2013), "The European Union: Financial Integration and Fragmentation in the European Union", European Union Financial Sector Assessment Program Technical Note, IMF Country Report No. 13/71, March 2013.

68 Bindseil, U., Cour-Thimann, P. and König, P. (2012), "TARGET2 and Cross-border Interbank Payments during the Financial Crisis", CESifo Forum Special Issue, p. 83-92. For further discussion of TARGET2 balances and developments during the crisis see Box 4 in the October 2011 issue of the ECB's Monthly Bulletin.

69 The Federal Reserve System dynamics are discussed in more detail in Lubik, T. and Rhodes, K. (2012), "TARGET2: Symptom, Not Cause, of Eurozone Woes", *Economic Brief*, No 12-08, Federal Reserve Bank of Richmond, pp. 1-5.

Table 2 US and euro area financial sector comparison

	United States		euro area	
	2007	2012	2007	2012
Total financial institution assets	USD 31.1 trillion	USD 31.1 trillion	EUR 45.7 trillion	EUR 53.0 trillion
Non-bank (shadow banking) elements*	USD 18.9 trillion	USD 15.0 trillion	EUR 8.5 trillion	EUR 10.8 trillion
Shadow banking as % of total financial sector	61%	48%	19%	20%

Sources: For the United States, Financial Stability Oversight Council and US Office of Financial Research annual reports; for the euro area, the February 2013 issue of the ECB's Monthly Bulletin.

Note: The definition of shadow banking is not straightforward; however, here it refers to non-bank segments of the financial system that are not backstopped by the central bank.<sup>1)</sup>

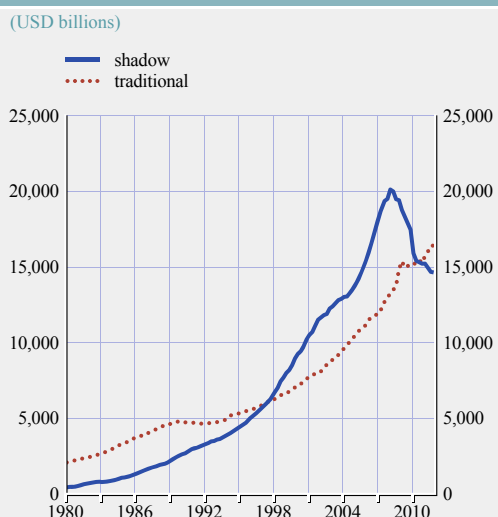
1) Bakk-Simon, K., Borgioli, S., Giron, C., Hempell, H.S., Maddaloni, A., Recine, F. and Rosati, S. (2012), "Shadow banking in the euro area – an overview", *ECB Occasional Paper Series*, No 133.

## NON-BANKS

As in the euro area, the interconnections between bank and non-bank segments are important.<sup>70</sup> In the United States, the role of non-banks in the shadow banking sector has historically been much larger than in the euro area; non-banks remain important sources of secured and unsecured short-term wholesale funding for banks and broker-dealers (Chart 57). However, since 2007, this trend has shifted, with sharp declines in repos and off-balance sheet securitised assets amounting to what some call a "run" on shadow banking entities. Bank deposits have since grown, supported by expanded FDIC deposit insurance; conversely, short-term wholesale funding from non-bank sources such as money market funds and securities lenders has declined, owing to risk aversion, deleveraging and regulatory pressure (Chart 58). In the euro area, during the pre-crisis period, the financial sector was less reliant on short-term wholesale funding relative to deposits than it was in the United States. The importance of retail deposits relative to short-term wholesale funding in the euro area has also recently increased (Chart 59).

**Regulated money market funds** play a larger role in the United States than in the euro area, with more than USD 2.5 trillion in assets under management. In the United States, money market funds are viewed purely as investment vehicles and, as such, are regulated by the Securities and Exchange Commission (SEC) under rule 2a-7 of the Investment Company Act of 1940.<sup>71</sup> Regardless of designation, money market funds in both the United States and the euro area are very liquid, offering daily redemptions. US money market funds have historically been structured so as to maintain a stable net asset value (NAV) of USD 1 – which

Chart 57 Shadow banking liabilities versus traditional banking liabilities in the United States

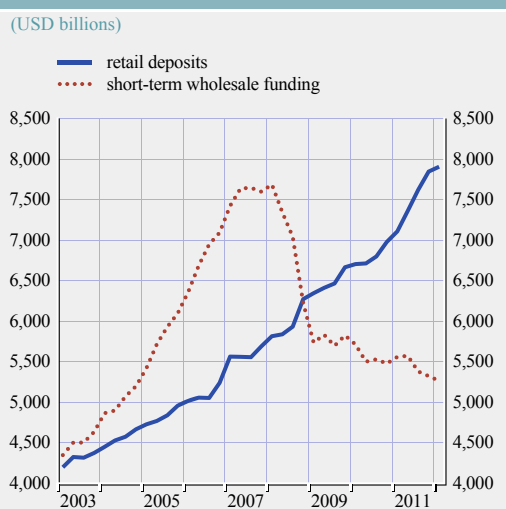


Sources: Office of Financial Research and Pozsar et al. (2012).<sup>1)</sup>  
1) Pozsar, Z., Adrian, T., Ashcraft, A. and Boesky, H. (2012), "Shadow Banking", *FRBNY Staff Reports*, No 458, Federal Reserve Bank of New York.

70 Bakk-Simon et al. (2012), op. cit., finds that the interconnection in the euro area has increased.

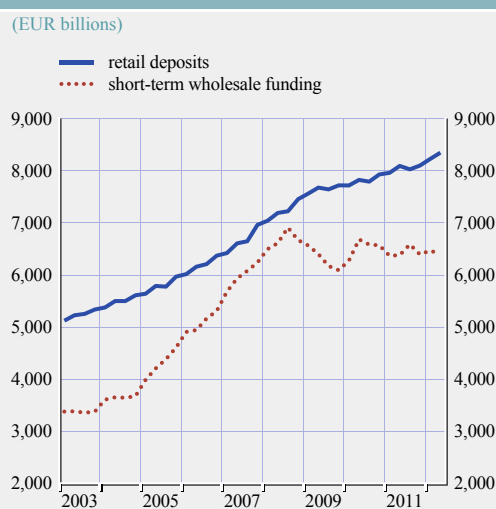
71 By contrast, the Eurosystem classifies money market funds as monetary financial institutions (MFIs), as their short-term, low-risk shares/units are seen as deposit substitutes. According to Bakk-Simon et al. (2012), money market funds account for only 4% of the balance sheets of MFIs in the euro area, with banks accounting for 96%.

**Chart 58 Retail deposits versus short-term wholesale funding in the United States**



Sources: Financial Stability Oversight Council (FSOC), Federal Reserve System and the FDIC.

**Chart 59 Retail deposits versus short-term wholesale funding in the euro area**



Source: Euro Area Accounts.

contributed to stress during the financial crisis when one firm “broke the buck” i.e. the value of one unit went below USD 0.995 – while the majority of euro area money funds have been structured as floating NAV funds.

There is a broad divide in SEC regulations between retail and institutional funds. Institutional money market funds are subject to both SEC regulations and, usually more restrictive, rating agency requirements. Generally, a USD 100,000 minimum investment is used as proxy for institutional funds. Money market funds comprise “prime” funds, which principally invest in non-government securities, and government-only funds.

There are strong relationships between money market funds and banks, both through ownership by bank holding companies as noted earlier and, more importantly, through investments in unsecured bank commercial paper. However, the risk-averse nature of the investor base coupled with the ability to redeem shares daily can lead to rapid investment shifts. Institutional flows are particularly volatile. Indeed, prime money market fund lending to the largest 20 financial firms decreased from 53% of total assets in May 2011 to 40% in September 2012.<sup>72</sup>

Rule 2a-7 was amended in 2010 to improve the liquidity of funds and the quality of money market fund portfolio securities following the financial crisis. These changes have strengthened the resiliency of money market funds. However, the “slow-motion run” on US money market funds in 2011, owing to concerns about European sovereign debt exposure, illustrated the high and increasing responsiveness of money market fund investors to the potential risks and the overall systemic importance of the sector.<sup>73</sup>

<sup>72</sup> Sources: SEC and ECB calculations.

<sup>73</sup> This episode also reveals that the 2010 reforms did not fully mitigate the possibility of runs and related systemic risks; further money market reform is being discussed by the SEC and the FSOC. See FSOC (2012), “Proposed Recommendations Regarding Money Market Mutual Fund Reform”, US Department of the Treasury, November 2012.

**Non-financial corporations** are large money market investors, with an estimated USD 1.5 trillion in liquidity to deploy in short-term investments.<sup>74</sup> Additionally, **securities lenders** are important market participants. Most securities lending is done against cash collateral; hence securities lenders usually have large pools of cash that they seek to re-invest on behalf of their clients. Investment strategies often resemble the investment strategies of money market funds.<sup>75</sup> The evolution of the largest wholesale cash investors can be seen in Chart 60.

In the United States, another set of large investors in money markets is the **government-sponsored enterprises (GSEs)**.<sup>76</sup> The large housing GSEs, Fannie Mae and Freddie Mac, receive large amounts of cash from principal repayments and interest on GSE-guaranteed mortgage-backed securities (MBSs) that is invested in short-term money markets until needed for debt repayments. Since September 2008 these entities have been under the conservatorship of the Federal Housing Finance Agency (FHFA), which places strict rules on the set of counterparties with which GSEs can transact. Other GSEs include the Federal Home Loan Banks (FHLBs), whose primary business is to provide banks with advances and which also have a precautionary liquidity line to invest in money markets.

### 3 MAJOR POLICY AND REGULATORY CHANGES

In addition to the institutional structure, certain policy and regulatory changes have influenced US money market dynamics. Of particular importance is the expansion of the Federal Reserve balance sheet through non-conventional policy programmes and the authorisation for the Federal Reserve to pay interest on reserve balances held by or on behalf of depository institutions. Expansion of federal deposit insurance in late 2008 and a change in the assessment base for deposit insurance in early 2011 also had notable impacts on the market. This section describes those changes while their impact on money markets will be discussed in Section 4.

#### FEDERAL RESERVE: EXCESS RESERVES, INTRODUCTION OF IOER, LARGE-SCALE ASSET PURCHASES, AND THE MATURITY EXTENSION PROGRAMME

The importance of the non-traditional banking sector became evident during the financial crisis, as many markets – such as those for commercial paper and asset-backed securities – ceased functioning.

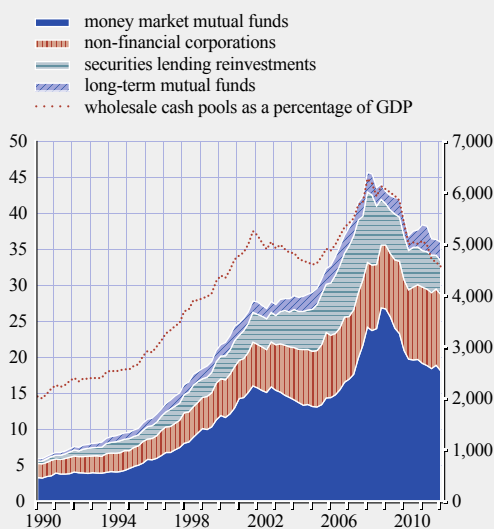
<sup>74</sup> FSOC 2012 Annual Report.

<sup>75</sup> Copeland, A., Martin, A. and Walker, M. (2012), “Repo Runs: Evidence from the Tri-Party Repo Market”, *FRBNY Staff Reports*, No 506, Federal Reserve Bank of New York, March 2012.

<sup>76</sup> GSEs include, among others, the two large housing entities, the Federal National Mortgage Association (commonly known as Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac), and the Federal Home Loan Banks (FHLBs).

Chart 60 Wholesale cash investors

(Percentage of GDP, left-hand scale; USD billions, right-hand scale)



Source: FSOC (2012).

The intensification of the crisis in 2007-2008 led the Federal Reserve to provide emergency liquidity to various market participants, including non-bank entities that did not previously have access to the central bank liquidity backstop.

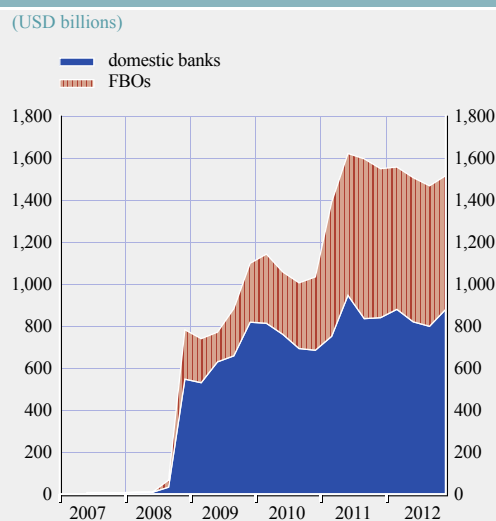
The Federal Reserve's liquidity backstop facilities were targeted at different sectors and market participants. For example, Term Auction Facility credit was available to depository institutions in the United States. To address US dollar funding shortages in offshore markets, US dollars were made available abroad at harmonised prices via selected other central banks. Other programmes targeted specific sectors, such as the commercial paper and asset-backed securities markets, and granted access to both bank and certain non-bank participants.

In December 2008, the Federal Open Market Committee (FOMC) lowered the target for the federal funds rate to a range of 0 to 25 basis points. To provide further policy accommodation and drive down private borrowing rates, the Federal Reserve began purchasing substantial quantities of assets with medium and long maturities. These large-scale asset purchases (LSAPs) have taken the form of outright purchases of US Treasury securities and MBSs.<sup>77</sup>

In addition, the Federal Reserve conducted its maturity extension programme from September 2011 to December 2012. Under this programme, the Federal Reserve extended the duration of its balance sheet by selling shorter-term Treasury securities and buying an equal amount of longer-term Treasury securities. As will be discussed, the maturity extension programme has influenced secured money market dynamics.

These programmes led to a rapid and sustained expansion of the Federal Reserve's balance sheet with a resultant increase in bank reserve balances from roughly USD 10 billion on 28 June 2007 to roughly USD 1.5 trillion at the end of 2012. With effect from 9 October 2008, the Federal Reserve began paying interest of 25 basis points on depository institutions' required and excess reserves.<sup>78</sup> By contrast, the Eurosystem has always remunerated required reserves, and has not remunerated excess reserves kept on banks' current accounts with the Eurosystem which, historically, i.e. before the financial crisis, used to be insignificant.<sup>79</sup> With the increase in US excess reserves not tied to deposit levels, FBOs amassed much of the reserve growth (Chart 61).

Chart 61 Reserve balances held at the Federal Reserve



Source: Federal Reserve System.

77 Gagnon, J., Raskin, M., Remache, J. and Sack, B. (2010), "Large Scale Asset Purchases by the Federal Reserve: Did They Work?", *FRBNY Staff Reports, No 441*, Federal Reserve Bank of New York.

78 Authorisation for interest on excess reserves was granted by the "Emergency Economic Stabilization Act of 2008", which allowed the Federal Reserve Board to amend Regulation D (Reserve Requirements of Depository Institutions). This legislation also gave the Federal Reserve the ability to set reserve requirements to zero.

79 In the current environment, excess liquidity in the euro area can be deposited at the Eurosystem's deposit facility. However, since 11 July 2012, the deposit rate has been zero and, accordingly, euro area banks are not likely to differentiate between keeping their excess liquidity on their current account with the Eurosystem or depositing it at the deposit facility.



Non-depository institutions, such as money market funds, GSEs and FHLBs do not qualify for interest on reserves. As will be discussed in more detail in this Special Feature, the massive provision of excess liquidity and introduction of interest on excess reserves (IOER) influenced money markets.

The provision of excess liquidity is similar to what has happened in the euro area, where the ECB has taken extraordinary policy measures to improve market functioning and repair the monetary transmission mechanism. These include full-allotment main refinancing operations, three-year longer-term refinancing operations (LTROs) and measures to increase Eurosystem collateral availability, which similarly expanded the ECB balance sheet.

#### FDIC: BROADENING OF THE DEPOSIT INSURANCE ASSESSMENT BASE

FDIC deposit insurance is paid for through fees paid by depository institutions. The FDIC broadened the assessment base for FDIC deposit insurance premia on 1 April 2011 from domestic deposits to total assets less average Tier 1 capital.<sup>80</sup> The expanded deposit insurance assessment base now includes reserve balances held at the Federal Reserve. This thus acts as a quasi-tax on all assets, including reserve balances, for banks that have deposit insurance.

At the same time, the FDIC charge for large and complex institutions was set higher than for smaller banks. In essence, the FDIC charge served to incentivise banks not to rely on short-term unsecured loans (e.g. fed funds, CP) and secured debt (e.g. repos), as these instruments are now effectively taxed by the FDIC at the same rate as domestic deposits, even though they are not insured by the FDIC. The new FDIC assessment regime, while intended to better protect taxpayers from large bank failures due to riskier activity, distorted activity in the short-term rates markets through which the Federal Reserve traditionally implements monetary policy, as discussed in more detail in Section 4.

#### FDIC: TRANSACTION ACCOUNT GUARANTEE PROGRAMME

In October 2008, to help prevent retail and corporate deposit outflows, the FDIC increased deposit insurance to USD 250,000 from USD 100,000 and temporarily removed the insurance limit for all non-interest-bearing transaction accounts. The unlimited FDIC guarantee on these accounts particularly encouraged inflows into non-interest bearing deposits at domestic banks, particularly at the largest institutions, leading to USD 1.4 trillion in “excess” insured deposits above the USD 250,000 guarantee level.<sup>81</sup>

The programme expired at the end of 2012. Market participants expected that cash flight out of banks and into money market instruments, such as money market funds might occur, with corresponding predictions that such flows could lead to lower short-term money market rates. Market analysts estimated that even a drop in deposits by only 10-20% (equating to USD 140 to 280 billion) would push short-term yields lower. The expiration of the Transaction Account Guarantee Programme appears to have slightly increased the amount of cash to repo markets, although overall bank deposits have not meaningfully decreased in early 2013.

<sup>80</sup> As mandated by the Dodd-Frank Act (July 2010).

<sup>81</sup> *Quarterly Banking Profile*, Third Quarter 2012, FDIC, 30 September 2012.

## 4 US MONEY MARKET DYNAMICS

In both unsecured and secured short-term markets, the combination of risk aversion and policy and regulatory changes has altered quantity and pricing metrics. There are broad parallels with euro area money market dynamics, but also some differences in terms of the level of financial integration.

### UNSECURED MONEY MARKETS – FED FUNDS

Federal funds, or “fed funds”, are unsecured loans of reserve balances at Federal Reserve Banks that institutions make to one another. The weighted average rate at which overnight transactions occur is called the effective fed funds rate.<sup>82</sup> The Federal Open Market Committee (FOMC) used to use the fed funds market as its primary tool for implementing monetary policy by setting a target level for the fed funds rate.<sup>83</sup> The monetary policy transmission mechanism through changes in the fed funds rate directly affects the level of economic stimulus. Interest rates paid on other short-term financial securities (e.g. CP and Treasury bills) often move in parallel with the fed funds rate and yields on long-term assets (e.g. corporate bonds and Treasury notes) are determined in part by expectations for the fed funds rate in the future.

The market for fed funds is an over-the-counter market in which the size and interest rate of a trade are negotiated bilaterally, either through a broker or on a direct bilateral basis. As directed by the FOMC, the Federal Reserve Bank of New York Markets Desk “creates the conditions in reserve markets” so that market participants trade at this level.<sup>84</sup> Participants in the fed funds market include commercial banks, savings banks and credit unions, the US branches, agencies and non-bank subsidiaries of foreign banks (FBOs), federal agencies (GSEs), and government securities dealers.<sup>85</sup> Prior to the financial crisis, many relatively small institutions accumulated reserves in excess of requirements and lent fed funds to larger banks. Before IOER, institutions with excess reserves wanted a return and those with a reserve deficit needed to borrow to meet the requirement.<sup>86</sup>

Since the financial crisis, the elevated level of reserves and the introduction of IOER, in addition to market frictions and shifts from unsecured into secured transactions, have contributed to a decline in fed funds trading. Data on the volume of fed funds trades is not published, although Federal Reserve research papers provide estimates.<sup>87</sup> By one measure, the average daily fed funds trading declined by nearly 70% between 2008 and 2010. This reduction in volume was driven by a fall in the average daily number of transactions in the final two and a half hours of trading each day, from 740 in 2008 to less than 200 in 2010, signalling that banks have little need for late day re-allocation to meet their reserve requirements.<sup>88</sup>

82 Volume-weighted average rate of brokered overnight fed funds published on the website of the Federal Reserve Bank of New York (<http://www.newyorkfed.org/markets/omo/dmm/historical/fedfunds/ff.cfm>), along with the high and low and standard deviation.

83 Instead of a target level, the FOMC defined a target range of 0-25 percent for the fed funds rate on 16 December 2012, which is still effective at the time of writing. Other tools such as LSAPs and forward policy guidance are now used in conjunction with fed funds.

84 Source: FOMC meeting minutes.

85 Participants in this market are determined by Regulation D of the Federal Reserve System.

86 Banks may also be motivated to acquire reserves for the clearing of financial transactions, as payments are made from the same account in which banks hold reserves.

87 Research estimates rely on an algorithm based on the work of Furfine (1999) to identify fed funds trades among Fedwire cleared transactions. However, more recent research calls this method into question. See Armantier, O. and Copeland, A. (2012) “Assessing the Quality of ‘Furfine-Based’ Algorithms”, *FRBNY Staff Reports*, No 575, Federal Reserve Bank of New York, October 2012.

88 Afonso, G. and Lagos, R. (2012), “An Empirical Study of Trade Dynamics in the Fed Funds Market”, *FRBNY Staff Reports*, No 550, Federal Reserve Bank of New York, February 2012. Please note, this research relies on the Furfine method and may not be representative of actual market activity.

At any interval of time during a fed funds trading session, there is a distribution of fed funds rates agreed upon in bilateral transactions between borrowers and lenders. Afonso and Lagos (2012) find that, even in normal times, there tends to be significant dispersion in the distribution of rates agreed upon on a given day. This dispersion increased significantly during the second half of 2007 and 2008, while for extended periods during 2009 and 2010 the vast majority of loans traded below the IOER rate of 25 basis points.

The contraction in interbank borrowing is also seen in publicly-available Federal Reserve data on bank borrowing, which include both fed funds and other non-deposit sources of funding, such as repos.<sup>89</sup>

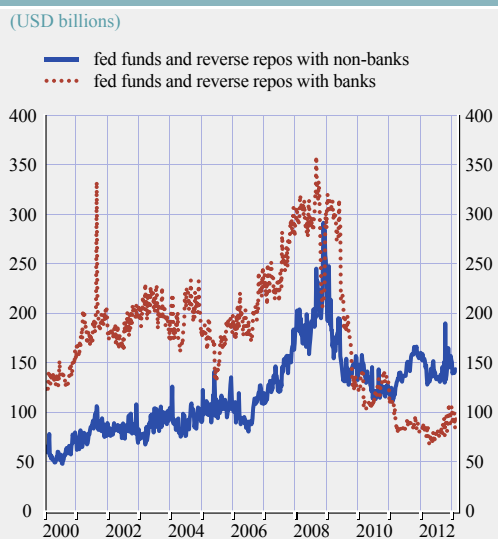
Pre-crisis, bank borrowing was mainly from other US banks, although this borrowing fell dramatically in early 2009 and remained relatively flat over 2011 and 2012, while borrowing from non-bank sources such as the GSEs became more important (see Chart 62). As these non-bank entities are not eligible for IOER, they have an incentive to lend in the repo and fed funds markets to earn even a small positive return.

However, counterparty credit concerns among non-bank lenders have led to a reduction in unsecured exposure to certain banks. For example, changes to risk management practices have led at least some GSEs to limit the number of counterparties they have in the money market and to tighten credit lines, but having fewer counterparties to which they are willing to lend likely limits the bargaining power of the GSEs.<sup>90</sup>

These dynamics mean that the remaining active short-term unsecured borrowers are of an increasingly high credit quality. The lack of market participation from lower quality borrowers puts further downward pressure on unsecured borrowing costs. This dynamic holds for fed funds and other short-term unsecured money markets.

In summary, a number of factors have contributed to changing market dynamics. Due to excess liquidity – reinforced by strong deposit growth due to expanded FDIC insurance coverage – and a lack of arbitrage opportunities as a result of the higher FDIC fee, fewer banks are participating in the market. As a result, the majority of fed funds trade well below the 25 basis point IOER level. Market analysts note that, as a result of low rates and counterparty restrictions, the fed funds market is becoming even more concentrated. Furthermore, the low volatility of fed funds trades in the current environment is probably a function of a more concentrated market with mostly high-quality banks and fewer lenders.

Chart 62 Fed funds participation shifting to non-banks



<sup>89</sup> Federal Reserve H.8 release.

<sup>90</sup> Bech, M. and Klee, E. (2010), "The Mechanics of a Graceful Exit: Interest on Reserves and Segmentation in the Federal Funds Market", *Finance and Economics Discussion Series Working Paper*, No 2010-07, Federal Reserve Board.

**Table 3 Fed funds versus EONIA – key attributes**

	Effective fed funds rate	EONIA (euro overnight index average)
Definition	The rate at which overnight, unsecured loans of reserve balances are made. Based on brokered transactions.	The rate of overnight unsecured lending transactions in the interbank market initiated by the contributing panel banks.
Calculation	Weighted average rate calculated by the Federal Reserve based on brokered fed funds trades made throughout the day.	Weighted average rate calculated by the ECB as calculation agent, based on end of day contributions of panel banks.
Frequency	Published daily by the Federal Reserve with a one-day lag.	Published daily (same day) by Thompson Reuters on behalf of Euribor-EBF.
Set of potential contributors	All fed funds market participants, including depository institutions (around 6,000) and certain non-bank entities.	Euribor panel banks (39 at time of writing).
Central bank steering (historical)	Daily open market operations (OMOs) to “create the conditions in reserve markets” so that market participants trade at this level.	Provision of liquidity through OMOs in line with calculated liquidity needs, averaging provision for minimum reserves. Occasional fine-tuning operations.

Sources: Federal Reserve, Euribor-EBF.

## FED FUNDS VERSUS EONIA

The role of the effective fed fund rate is mirrored in the euro area by the euro overnight index average (EONIA). Current dynamics in the fed funds market are similar to those of the overnight unsecured market in the euro area, where the size and rate of trades are negotiated bilaterally, through a broker or on a direct bilateral basis, and the overnight rate is determined by market participants but primarily influenced by the monetary policy decisions of the ECB. Key attributes of the fed funds market and EONIA are compared in Table 3.

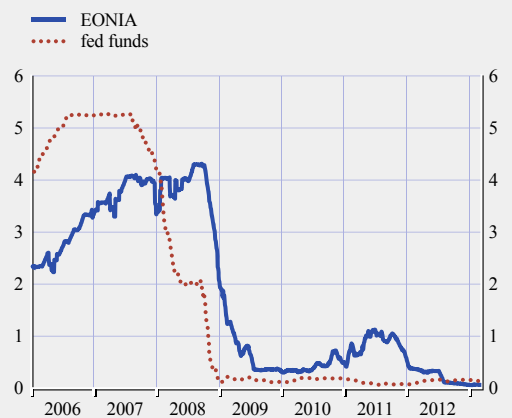
The main drivers of fed funds and EONIA are the policy rate decisions of the Federal Reserve and ECB, respectively. The fed funds rate appears to be less volatile, which is probably a result of the Federal Reserve’s explicit targeting of the fed funds rate in its monetary policy framework (Chart 63), while the ECB does not directly target EONIA.

A comparison of the intraday standard deviation of fed funds trades with the standard deviation of daily EONIA contributions provides some insight into the relative financial integration of the US and euro area money markets (see Chart 64).<sup>91</sup>

Before the crisis, the standard deviation of fed funds trades was higher than that of EONIA. The low deviation of EONIA contributions may be

**Chart 63 Fed funds and EONIA levels**

(percentage one-month moving average)



Sources: Federal Reserve, Euribor-EBF.

91 The intraday standard deviation of rates around the daily effective rate is the most comprehensive measure of rate volatility within a day, according to Hilton, S. (2005), “Trends in Federal Funds Rate Volatility”, *Current Issues in Economics and Finance*, Vol. 11, No 7, Federal Reserve Bank of New York.

attributable particularly to the broad provision of liquidity through the Eurosystem framework and the averaging provision of reserve holdings within a maintenance period.

The standard deviation of fed funds trades increased markedly from the second half of 2007 to early 2009. Since then, fed funds have settled into a lower and more stable range compared to the pre-crisis period. As discussed, this is attributable to the increased concentration of higher-quality borrowers and lenders. Also, the very low fed funds rate level close to the zero bound currently serves to limit dispersion, as there is no economic reason to trade at negative rates.

The dispersion in EONIA increased at various stages of stress in the euro area, reflecting counterparty credit risk concerns among panel banks, which, given the euro area sovereign debt crisis, are also closely connected to country risk concerns (see Chapter 1 of this report). This dispersion fell substantially following the announcements of three-year LTROs for end-2011 and early 2012 and fell further following the 25 basis point interest rate cut in July 2012.

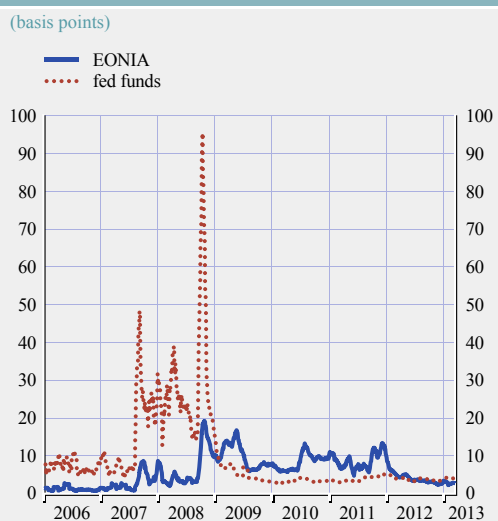
The motivations for trading overnight are similar in both economies, i.e. meeting reserve requirements, creating liquidity buffers and earning interest. In the euro area, the accumulation of a sizeable excess liquidity has largely reduced the first two motivations, and the setting of the deposit facility remuneration rate to zero, by allowing the overnight rate to also move close to zero, has eliminated the third motivation. As discussed in Special Feature A, this very low interest rate environment has contributed to a decline in overnight unsecured interbank trading volumes.

## OTHER UNSECURED MARKETS

**Eurodollar deposits** represent the other major overnight US dollar money market segment. Eurodollar deposits are US dollar-denominated deposits held in a bank or bank branch outside of the United States.<sup>92</sup> By definition, US domestic banks – including agencies and branches of foreign banks in the United States – cannot directly borrow in the Eurodollar market. However, non-US offices can accept Eurodollars and transfer the funds to US affiliates, where they have the same impact on reserve requirements.<sup>93</sup>

A broader and more diverse set of participants is eligible to transact in Eurodollars than in fed funds. This includes affiliates of US domestic and foreign banks (as both borrowers and lenders)

Chart 64 Fed funds and EONIA dispersion



Sources: Federal Reserve, Euribor-EBF.  
Notes: Dispersion is computed as the daily standard deviation of contributions.

92 The practice of accepting USD-denominated deposits outside the United States first began in Europe, but has now spread to all global financial centres.

93 Although Eurodollar liabilities are included as reservable liabilities, they have been assigned a required reserve ratio of zero since 1990, making them similar to fed funds in terms of reserve requirements. Fed funds are not included as a reservable liability for the purpose of reserve requirements.

and a wider set of lenders, including money market funds and non-financial corporations, both domestic and foreign. There are no available data on Eurodollar volumes, but it is estimated that the Eurodollar market has grown from about half to about twice the size of the federal funds market since the mid-1980s.<sup>94</sup>

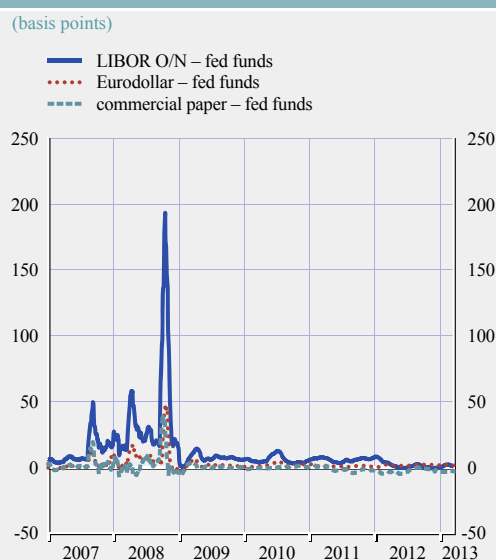
Some European banks also maintain branches in the United States that enable them to trade in both Eurodollars and fed funds, as do US banks that maintain a segregated set of foreign accounts (international banking facilities). Because of this partial overlap in the parent institutions, arbitrage opportunities help to keep the Eurodollar and fed funds markets integrated. Indeed, research shows that Eurodollar deposits and fed funds purchases are integrated, especially when market liquidity is strong. However, while these markets are integrated in normal times, there was some divergence during the financial crisis.<sup>95</sup> Differences between the set of participants transacting in these two overnight market segments and their varied access to domestic deposits and central bank liquidity can lead to differentiated money market pricing in times of market stress and low liquidity.

At the beginning of the financial crisis, a decoupling between domestic and international USD funding conditions exacerbated tensions in unsecured funding markets. However, Eurodollar trades made in New York and fed funds trades did not become as untethered from one another as the overnight **USD London-Interbank Offered Rate (LIBOR)** and fed funds (Chart 65).<sup>96</sup>

Given that USD LIBOR reflects funding conditions for certain non-US banks within the panel, this signals some segmentation between US and non-US banks. The flow of deposits to domestic banks, supported by the expanded FDIC insurance guarantee, may also have lowered money market supply for foreign institutions. In addition, the USD-EUR FX swap basis widened markedly over this period, further highlighting the importance of time zone or geographical segmentation.<sup>97</sup> Indeed, USD LIBOR continues to exhibit more volatility than fed funds or Eurodollars.

Similarly, foreign banks and corporates are important market participants in the short-term **US commercial paper (CP) market**. Among unsecured (i.e. non asset-backed) commercial paper, foreign issuance represents approximately 40% of total financial CP outstanding and 20% of total non-financial CP outstanding.<sup>98</sup> By

**Chart 65 Various unsecured spreads to fed funds**



Sources: Federal Reserve and Wrightson ICAP.  
Notes: Spreads computed as one-month moving average. Commercial paper represents non asset-backed issuance from AA-rated non-financial firms.

94 Bartolini, L., Hilton, S. and Prati, A. (2006), “Money Market Integration”, *IMF Working Paper*, No 06/207.

95 McAndrews (2009), op. cit.

96 As per the British Bankers’ Association website: The rate at which an individual contributor panel bank could borrow funds, were it to do so by asking for and then accepting interbank offers in reasonable market size, just prior to 11.00am London time.

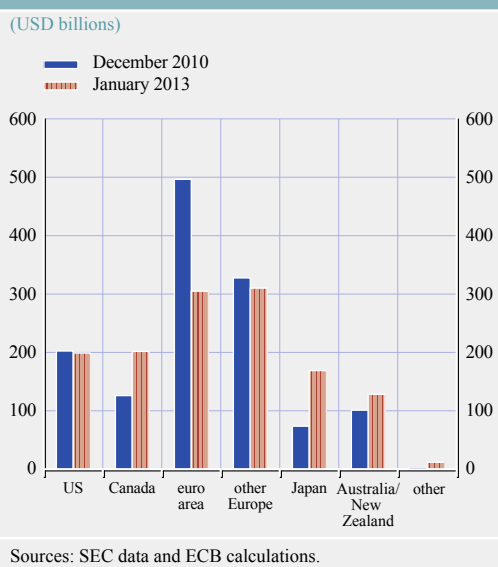
97 The central bank swap lines, which were utilised to beyond USD 500 billion in early 2009, are credited with moderating the divergence in unsecured rates between fed funds and Eurodollar markets and helping to reduce the USD-EUR FX swap basis.

98 CP data is published on the Federal Reserve System’s website and derived from data supplied by the DTCC: <http://www.federalreserve.gov/releases/cp/default.htm>.

contrast, the comparable short-term European paper (STEP) market in the euro area is very concentrated, with an estimated 93% of issuance by euro area firms.<sup>99</sup> The euro area is also largely concentrated in one jurisdiction, France, which accounts for half of euro area commercial paper, whereas other countries' commercial paper markets are not as developed.<sup>100</sup>

The US commercial paper market has exhibited reduced volumes and rates of unsecured funding that have largely tracked fed funds. Commercial paper outstanding peaked at USD 2.2 trillion in July 2007 and stood at approximately USD 1.0 trillion as of mid-March 2012. The decline is attributable to risk aversion towards financial institutions that account for the majority of CP issuance, reinforced by ratings downgrades. In essence, the market has become more concentrated.

Chart 66 Prime money market fund shifts in bank exposure, by region



In the United States, money market funds are currently the most active lenders of unsecured short-term funds, including commercial paper. The role of regulatory pressure and risk aversion in lowering unsecured short-term rates for money market funds is evident. Changes to SEC 2a-7 guidelines in 2010 have pushed money market funds towards top tier names. Specifically, SEC guidelines have reduced the amount of second tier securities that a money market fund can hold. In addition, downgrades of financial institutions and their short-term programme ratings have shrunk the universe of eligible securities. These pressures are thus leading to both lower money market pricing and lower volumes, as market access is limited for lower-quality counterparties.

Money market fund risk aversion towards euro area banks over 2011-12 is reflected in SEC data (Chart 66). The shift from euro area banks to other non-US banks does not indicate a home bias, but rather suggests that perceived risks from the euro area are driving money funds towards other international banks, particularly those from Canada and Japan.

In addition, there are a number of other important unsecured US money market instruments, including Treasury bills and agency discount notes. Short-term maturities in these actively traded, high-quality debt markets show the same dynamics of very low rates.

## SECURED MONEY MARKETS

During the crisis, volumes cleared on US repo infrastructure declined markedly relative to euro area repo market volumes, signalling that differences in infrastructure can have potential ramifications for the quantity of money market supply (see the [US and euro area repo infrastructure box below](#)). In addition, collateral shifted to safe US Treasury and agency collateral, as repos in corporate and structured products were essentially no longer possible. These trends persisted

<sup>99</sup> Source: ECB.

<sup>100</sup> Further discussion of euro area commercial paper can be found elsewhere in this report and in the ECB's 2012 Money Market Study.

through 2011 and 2012, with increases in Treasury and agency MBS volumes (approximately 25% combined) cleared by tri-party repos and a decrease in non-government collateral of approximately 15%.<sup>101</sup> These developments have made US repo collateral even more homogenous compared to the diversity of fixed-income collateral across the 17 euro area countries.

In the euro area, pricing in secured money markets has revealed segmentation among market participants in different euro area countries, discussed elsewhere in this report. In the United States, differentiation in money markets is more subtle. As described below, different groups of market participants have varying incentives and thus responses to regulatory changes that may indicate frictions or temporary shifts in the degree of financial integration. Such a shift has been evident in secured money market products trading at yields above unsecured rates, for reasons discussed below.

Historically, short-term unsecured money market products trade at rates above overnight general collateral (GC) repo rates, reflecting the credit risk component in the unsecured transaction. However, in the current environment in the United States, unsecured money market products (e.g. federal funds, Eurodollars, and CP with maturities of less than 270 days) has frequently traded at yields below those of overnight GC repos. Indeed, the spread between GC repo and short-term unsecured rates widened in late 2012 and, notably, exceeded the rate of interest on excess reserves of 25 basis points (Chart 67).

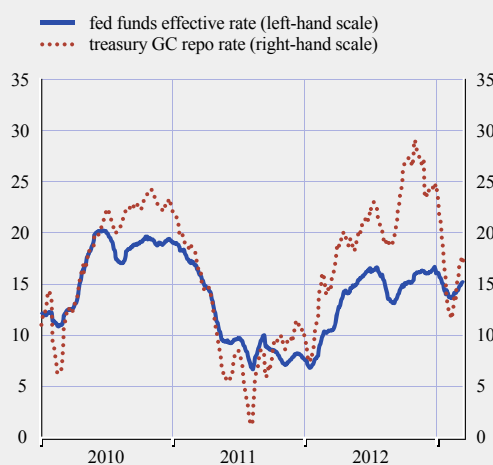
There are various reasons for this awkward dynamic, some structural, some regulatory, and some related to risk aversion. As discussed in the previous section, the combination of policy changes and counterparty credit risk concerns has kept unsecured rates low. There are also specific secured market dynamics and frictions that might explain why the overnight repo rate has been higher than the overnight unsecured rate.

First, secured market dynamics have been influenced by the Federal Reserve's maturity extension programme. For example, dealers have been warehousing Treasuries and agency MBSs to sell to the Federal Reserve. Even though the maturity extension programme had a neutral impact on aggregate liquidity (the Federal Reserve financed long-term debt purchases by selling short-term debt), primary dealers had larger portfolios to finance until securities could be distributed to investors. Increasing supply pushed the GC Treasury repo rate higher. (Conversely, following the end of the maturity extension programme at the end of 2012, decreasing dealer holdings of short-term Treasury securities contributed to a decline in repo rates.)

Additionally, the increase in the FDIC deposit insurance fee and the reduced liquidity in the

**Chart 67 Secured higher than unsecured rate**

(basis points, one-month moving average)



Sources: Federal Reserve, Depository Trust & Clearing Corporation (DTCC).

<sup>101</sup> Federal Reserve Bank of New York Tri-party Repo Statistical Data, ECB calculations.



market due to reduced market participation make dealers unwilling to arbitrage between secured and unsecured markets and between the Fed deposit facility and the repo market. Market participants who actively use interdealer markets to fund their inventories have to pay higher repo rates. Despite the decrease in concentration (and, conversely, increased competition), smaller dealers do not necessarily have access to deep money pockets, such as money market funds.

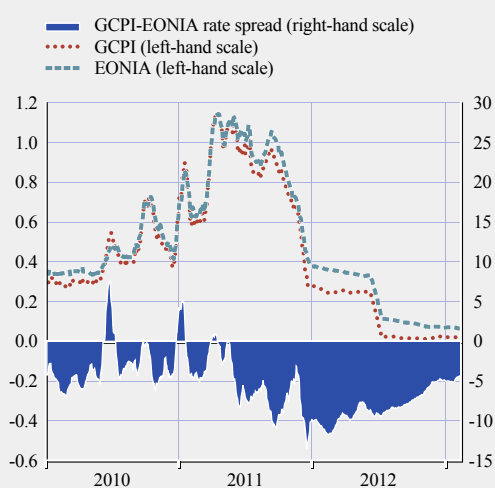
Different pressures on secured market rates might be expected from changes in the investments of money market funds, which are active in both unsecured and secured money markets. Amid the reduced willingness of money market funds to purchase unsecured bank paper due to risk aversion and regulatory developments, borrowers have been forced to replace some of this funding with repos. Indeed, prime money market funds' share of secured exposure to banks in the form of repos has risen, to 30% in October 2012 from 8% in May 2011.<sup>102</sup> Regulatory amendments to Rule 2a-7 in 2010 indirectly encouraged repo transactions by taxable money market funds by requiring these funds to hold at least 10% of their assets in daily liquid instruments, such as overnight repos. However, regulatory requirements to maintain high-quality, short-duration portfolios would make it challenging for money market funds to take possession of longer-dated repo collateral in the event of dealer insolvency. Because of these collateral holding restrictions, money market funds focus on highest quality counterparties for their repo trade. This is an example of how changing regulatory requirements may affect the degree of integration within a given market segment and between segments.

In the euro area, the GC Pooling EUR Overnight Index (GCPI) for the top quality collateral basket may be seen as representative of repos within a restricted set of euro area countries.<sup>103</sup> Because of its liquidity and high credit quality, the GCPI is considered a sufficient equivalent to the GC Treasury repo rate in the United States. The GCPI has traded below unsecured (EONIA) rates and, in fact, started to trade more negatively against EONIA in 2011 due to flight-to-quality flows and cash lender willingness to accept lower rates against high-quality collateral (see Chart 68).

The difference in the spread between top-quality secured and unsecured overnight rates in the US highlights some current frictions in the US market, while in the euro area national segmentation remains the main challenge to financial market integration.

Chart 68 Select overnight repo rate spreads to EONIA

(basis points, one-month moving average)



Sources: Eurex Repo, MTS Repo and Banco de España.

102 ECB calculations using SEC data.

103 Eurex Repo publishes Euro GC Pooling interest rate indices on a daily basis. The GCPI is a daily measure of the (effective average) overnight interest rates in the secured euro money market based on the GC Pooling ECB basket, i.e. the top quality collateral basket (minimum rating A-). Countries included: Austria, Belgium, Germany, The Netherlands, France, Slovenia and international Eurobonds.

## 5 CONCLUSIONS

The diversity of market participants within the US institutional structure signals some degree of the potential for money market segmentation in the sense of having diverging developments in different segments of this market, particularly in times of stress.

There are differences in access to central bank liquidity among banks and non-bank entities. While it has decreased in size, the non-bank or shadow banking system in the United States continues to play an important role in short-term funding markets.

There are also differences in the provision of deposit insurance among domestic banks compared to foreign banks. Some depository institutions that have central bank access do not arbitrage the difference between short-term money market rates and interest on excess reserves because of a higher assessment fee on their deposit insurance base. Excess liquidity – reinforced by strong deposit growth on account of expanded FDIC insurance coverage – further reduces incentives to participate in the short-term unsecured markets.

In normal times, an overlapping set of market participants in different markets can help to keep markets integrated through arbitrage opportunities, although this can break down in times of heightened risk aversion.

Integration of several market segments has benefited from expansionary and accommodative policies following periods of severe stresses, but these policies also have consequences for the composition of market participants. The changing participation of market participants in certain US money market segments could point to further diverging developments across markets in future periods of stress. However, the frictions experienced in the United States are not as large as the fragmentation along national lines in the euro area.

### Box 2

#### REPO INFRASTRUCTURE

In general, the market for general collateral repurchase agreements (GC repos) is viewed as a safer and more reliable source of funding than uncollateralised money markets.<sup>1</sup> However, the near bankruptcy of Bear Stearns in March 2008 and the subsequent collapse of Lehman Brothers in September 2008 triggered a global decline in repo volumes, with a particularly sharp decrease in repos cleared on the US key infrastructure – tri-party repos. Given that infrastructure can play a critical role in fostering greater integration within the financial system,<sup>2</sup> it is worth comparing the US repo infrastructure with that of the euro area. The main difference is that, in the United States, GC repos are cleared by two clearing banks, while in the euro area they are settled by central securities depositories (CSDs).

1 A general collateral repo is a repurchase agreement in which the lender of funds is willing to accept any of a variety of Treasury, Agency and other securities as collateral.

2 See “Strengthening repo clearing and settlement arrangements,” Bank for International Settlements/Committee on Payment and Settlement Systems (September 2010) and ECB’s Euro money market study Box 4 (December 2010).

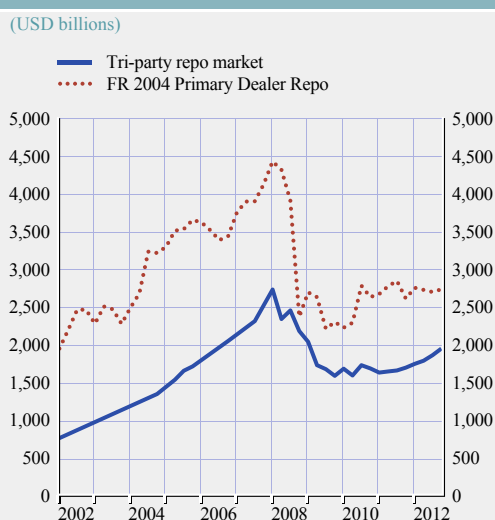
In the United States, the **tri-party** repo market includes two third-party clearing banks which provide settlement and collateral management services to dealers and investors. As a subset of the tri-party market, the General Collateral Finance (GCF) market is a blind-brokered interdealer market for dealers to trade general collateral in Treasuries, agencies, and MBSs without requiring trade-for-trade settlement.<sup>3,4</sup>

As in the euro area, there is no comprehensive data source for market size. Tri-party repo data collected by the Federal Reserve Bank of New York show that tri-party repo volumes peaked at USD 2.8 trillion in 2008. Volumes then declined to a low of USD 1.6 trillion and have since increased again to about USD 2.0 trillion.<sup>5</sup> US primary dealers' reliance on repos for short-term financing reportedly reached a peak of USD 4.5 trillion in March 2008 (see Chart A).<sup>6</sup> Some analysts believe that these estimates capture only a fraction of the total US repo market.<sup>7</sup> Euro area repo trading has been estimated at EUR 6.2 trillion, although this counts both borrowing and lending position.<sup>8</sup> The lack of data transparency in both markets has been cited as having the potential to affect the resilience of repo market functioning.<sup>9</sup>

US tri-party repos are more likely to be financed by non-bank counterparties. It is estimated that money market funds and securities lenders represent at least half of the cash invested in the tri-party repo market.<sup>10</sup> By contrast, most repo transactions in the euro area take place in the interbank markets.

US tri-party borrowers have historically been very concentrated, with the top ten dealers accounting for approximately 85% of repo transactions and the primary dealers being the

Chart A Estimated value of the repo market



Source: FSOC.

3 The Fixed Income Clearing Corporation (FICC) acts a central counterparty, netting trades each day and reporting net clearing amounts to the tri-party clearing banks.

4 Other repo segments that trade outside of this infrastructure include the over-the-counter **bilateral** market, where repo counterparties agree on terms and execute the trade without an intermediary, and **held-in-custody**, where collateral pledged by the (cash) borrower is not actually delivered to the cash lender but rather held in a segregated account by the borrower throughout the duration of the trade.

5 The Federal Reserve Bank of New York publishes monthly data on the Tri-Party Repo Infrastructure Reform page of its website ([www.newyorkfed.org](http://www.newyorkfed.org)).

6 Adrian, T., Burke, C. and McAndrews, J. (2009), "The Federal Reserve's Primary Dealer Credit Facility", *Current Issues in Economics and Finance*, Vol. 15, No 4, Federal Reserve Bank of New York.

7 As market participants do not know how much bilateral repo business takes place that does not involve the primary dealers, some have estimated the repo market to be at least USD 10 trillion. See Gorton, G. and Metrick, A. (2009), "Securitized Banking and the Run on Repo", *Yale ICF Working Paper*, No 09-14. However, more recent research argues that the Gorton and Metrick estimate is dated and inflated by double-counting. See Copeland, A., Davis, I., LeSueur, E., and Martin, A. (2012), "Mapping and Sizing the U.S. Repo Market", Liberty Street Economics Blog, Federal Reserve Bank of New York.

8 Bakk-Simon, K., Borgioli, S., Giron, C., Hempell, H.S., Maddaloni, A., Recine, F. and Rosati, S. (2012), "Shadow banking in the euro area – an overview", *Occasional Paper Series*, No 133, ECB.

9 Committee on Payment and Settlement Systems (2010), *Strengthening repo clearing and settlement arrangements*, report by the Working Group on Repo Market Infrastructure, Bank for International Settlements, September 2010.

10 Copeland, A., Martin, A. and Walker, M. (2012), "Repo Runs: Evidence from the Tri-Party Repo Market", *FRBNY Staff Reports*, No 506, Federal Reserve Bank of New York, March 2012.

most active borrowers.<sup>11</sup> However, the concentration in the tri-party market appears to be declining, which market participants attribute to regulatory pressure to reduce reliance on overnight repo financing. Furthermore, some analysts expect that this could become a trend as dealers aim for compliance with Basel III's Liquidity Coverage Ratio (LCR) (see Chart B).

The financial crisis highlighted weaknesses in the US tri-party repo infrastructure, as it was revealed that the two tri-party banks are the largest creditors in the tri-party repo market on each business day. This is the direct result of the clearing banks' practice of unwinding all maturing (overnight) and non-maturing (term) repos at the start of the processing day and settling new repos near the close of the processing day.<sup>12</sup> The extension of significant

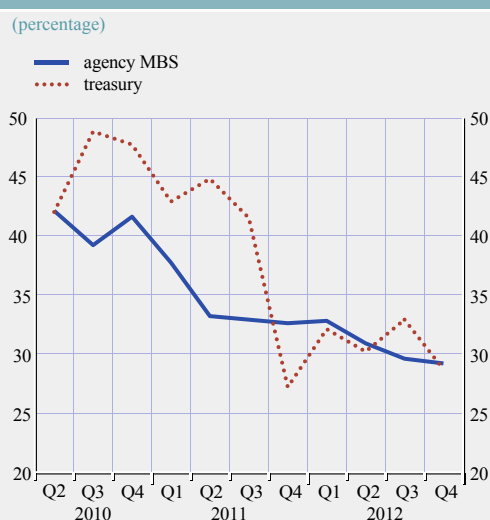
amounts of intraday credit – the exposure of a clearing bank to a single dealer can routinely exceed USD 100 billion – creates vulnerabilities for the repo infrastructure itself and for repo market counterparties. As a result, there are various reform efforts underway.<sup>13</sup>

In the United States, an alternative process in place of unwinds could be achieved by substituting collateral (including cash) into repo deals without unwinding them. However, the process of collateral allocation is complex and poses time constraints. For example, in the current market infrastructure, the tri-party collateral allocation process takes several hours, in part because most dealers also trade in the GCF repo market and may wait for GCF trades to settle before completing their tri-party repo allocations – an example of segmentation between market infrastructures.

The US structure compares with the infrastructure environment in the euro area, where certain national systems did not experience a reduction in tri-party repos during the crisis. Specifically, greater resilience was demonstrated during the financial crisis by euro area repo transactions cleared by central counterparties than by bilateral and tri-party repos.<sup>14</sup> By contrast, in the United States, the clearing of repos by central counterparties is limited, and there is greater reliance on the clearing bank infrastructure.

Through the day collateral substitution is prevalent in European tri-party repo markets. In German (Euro GC pooling segment), French (Euro GC) and Swiss repo markets, CSDs are aligned and integrated with central eligibility criteria and operations, allowing the re-use of collateral previously received in interbank repos for central bank liquidity. By contrast, US clearing banks

**Chart B Market share of top three tri-party repo dealers**



Source: Federal Reserve.

11 Federal Reserve Bank of New York (2010), "Tri-Party Repo Infrastructure Reform", White Paper, May 2010.

12 Thus, a "term repo" is effectively an interrupted sequence of overnight repos.

13 For a fuller discussion of repo market dynamics, risks, and reforms, see Copeland, A., Duffie, D., Martin, A. and McLaughlin, S. (2012), "Key Mechanics of the U.S. Tri-Party Repo Market", *Economic Policy Review*, Federal Reserve Bank of New York, forthcoming, Committee on Payment and Settlement Systems (2010), op. cit., and, Copeland, A., Martin, A. and Walker, M. (2010), "The tri-party repo market before the 2010 reforms", *FRBNY Staff Reports*, No 477, Federal Reserve Bank of New York, November 2010.

14 Committee on Payment and Settlement Systems (2010), op. cit.; see also Box 4 in the ECB's 2010 Euro Money Market Study.

have offered some automated collateral substitution capabilities to US tri-party repo market participants only since June 2011.<sup>15</sup>

In the United States, the Federal Reserve provides intraday credit to banks including the two clearing banks, which can then provide intraday credit to their participants. In France and Germany, the CSD provides an automated mechanism whereby a repo participant can receive automatic intraday credit from the central bank.

Efforts continue in United States to improve repo infrastructure, spearheaded by the Federal Reserve. In the euro area, the removal of residual geographical segmentation in securities settlement in the euro area is expected to benefit from the forthcoming implementation of the TARGET2Securities project. Even more significantly, the removal of the repatriation requirement from the Correspondent Central Bank Model (CCBM) and the implementation of cross-border tri-party collateral management services within the Eurosystem's collateral framework in 2014 represent enhancements to central bank services that will foster financial integration and increase liquidity of the euro area repo market. The process of integration would be completed by the full interoperability between market facilities for tri-party repo services. The Eurosystem is working with the industry in order to achieve such integration as soon as possible.

<sup>15</sup> Copeland et al. (2012), op. cit.

# STATISTICAL ANNEX

## FINANCIAL INTEGRATION INDICATORS 2013

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### EXPLANATION OF THE COUNTRY GROUPINGS

In this year's financial integration report, some financial integration indicators show not only the average across all euro area countries, but also a distinction between two groups of countries. The reason is that some financial integration phenomena can only be presented effectively when financial market developments of country groups are compared with each other. A simple average across all countries could hide or blur important financial integration developments for some indicators in the statistical annex, in particular in the money markets.

To make the distinction between country groups, a clear financial market criterion was selected in order to achieve an objective result which does not involve discretion. The grouping of countries is based on long-term sovereign interest rates for bonds with a remaining maturity of approximately ten years. The calculation of the average spread against the German long term sovereign interest rate is based on monthly data between January 2007 and November 2012. This factual criterion, which is simple and should thus be interpreted with due caution, leads to the following country groups:

- Countries with the highest sovereign interest rates: Cyprus, Greece, Ireland, Italy, Portugal, Slovenia and Spain. In the statistical annex, this group of countries is called “countries under financial stress” or “distressed countries”.
- Countries with the lowest and intermediate rates: Austria, Belgium, Estonia, Finland, France, Germany, Luxembourg, Malta, the Netherlands and Slovakia. In the statistical annex, this group of countries is called “non-distressed countries”.

Some financial integration indicators broken down by country grouping do not incorporate all the countries mentioned above, as data is sometimes not available for all countries. Where this is the case, the description of the respective indicator explains which countries are included.



MONEY MARKET INDICATORS

PRICE-BASED INDICATORS

Chart I

Cross-country standard deviation of average unsecured interbank lending rates across euro area countries (EONIA/EURIBOR)

Non-technical description

The analysis of the dispersion of interbank rates across countries contributes to the assessment of the state of integration and to the possible segmentation of markets. However, an increase in the standard deviation of rates cannot be automatically interpreted as sign of decreasing financial integration, given that other factors, like liquidity and the interplay with sovereign debt markets, also have an impact on the standard deviation.

Description

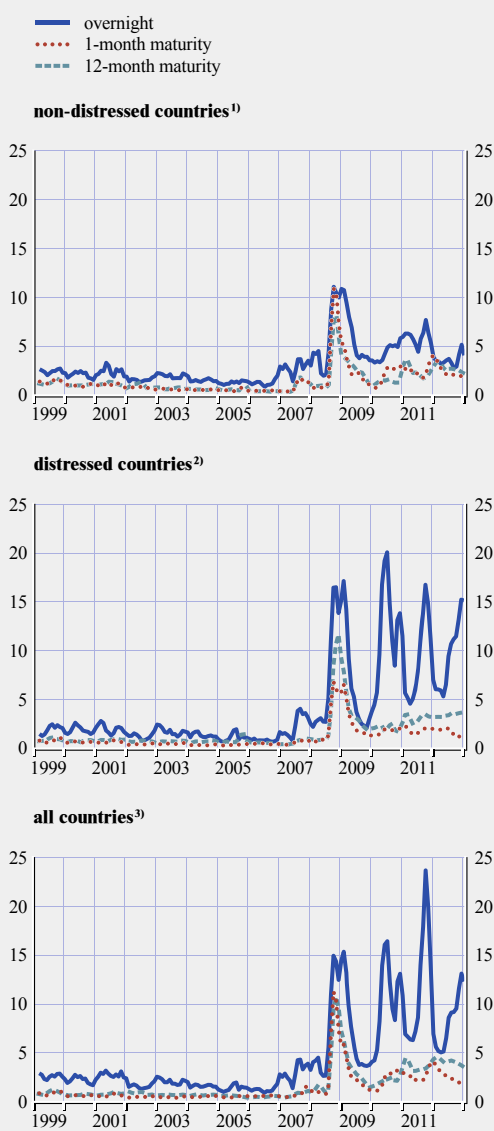
The EBF makes available (daily) business frequency data for a panel of individual institutions for both unsecured and secured short-term interbank debt and deposits. These data cover the EONIA and the EURIBOR (unsecured lending) as well as the EUREPO for various maturities.<sup>1</sup> Data on the EONIA SWAP INDEX are also available. For each dataset, the indicator is the unweighted standard deviation  $D_t$  of average daily interest rates prevailing in each euro area country. Reported rates are considered to be the national rates of country  $c$  if the reporting bank is located there. However, the counterparty of the transaction is not known, and the reported interest rate could thus potentially refer (in part) to transactions with a bank outside country  $c$ . The number of euro area countries ( $n_t$ ) is the number of countries that had adopted the euro in the reference period:

$$D_t = \sqrt{\frac{1}{n_t} \sum_c (r_{c,t} - r_t)^2} \quad (1)$$

1 For further information, see the EURIBOR. See also “The contribution of the ECB and the Eurosystem to European financial integration” in the May 2006 issue of the ECB’s Monthly Bulletin.

Chart I Cross-country standard deviation of average unsecured interbank lending rates across euro area countries (EONIA, EURIBOR)

(61-day moving average: basis points)



Sources: EBF and ECB calculations.  
1) Here: AT, BE, DE, FI, FR, LU, NL.  
2) Here: ES, GR, IE, IT, PT.  
3) Here: AT, BE, DE, ES, FI, FR, GR, IE, IT, LU, NL, PT.

where  $r_{c,t}$  is the unweighted average of the interest rate  $r_{i,t}^c$  reported by each of the panel banks  $m_c$  at time  $t$  in country  $c$ :

$$r_{c,t} = \frac{1}{m_c} \sum r_{i,t}^c \quad (2)$$

The euro area average  $r_t$  is calculated as the unweighted average of the national average interest rates  $r_{c,t}$ . The data are smoothed by calculating a 61 (business) day centred moving average of the standard deviation, transformed into monthly figures and taking the end-of-month observation of the smoothed series. For indicative series prices (EURIBOR, EUREPO), the data are corrected for obvious outliers. The computed indicator has a monthly frequency.

### Additional information

The EONIA is the effective overnight reference rate for the euro. The banks contributing to the EONIA are the same as the EURIBOR panel banks (composed of banks resident in the euro area and in other EU Member States, as well as some international banks). The EURIBOR is the rate at which euro interbank term deposits are offered by one prime bank to another within the euro area.

### Chart 2

#### Daily volumes and 30-day moving averages for the EONIA panel

##### Non-technical description

A lower daily number of banks trading in the EONIA interbank market, besides being a signal of possible increasing fragmentation of the market, has an impact on the values of the indicators calculated above.

##### Description

This chart shows the number of banks in the EONIA panel for which a price is available on a given date. The centred 30-day moving average is also displayed.

Chart 2 Daily volumes and 30-day moving averages for the EONIA panel

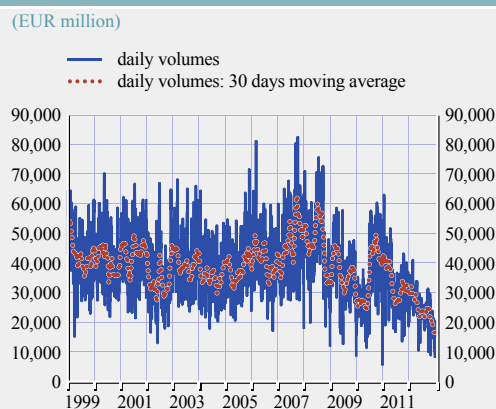


Chart 3

### Cross-country standard deviation of average interbank repo rates across euro area countries (EUREPO)

#### Non-technical description

The analysis of the dispersion of interbank rates across countries contributes to the assessment of the state of integration and to the possible segmentation of markets. However an increase in the standard deviation of rates cannot be automatically interpreted as sign of decreasing financial integration, given that other factors, like liquidity and the interplay with sovereign debt markets, also have an impact on the standard deviation.

#### Description

The EBF makes available (daily) business frequency data for a panel of individual institutions for both unsecured and secured short-term interbank debt and deposits. These data cover the EONIA and the EURIBOR (unsecured lending) as well as the EUREPO for various maturities.<sup>1</sup> Data on the EONIA SWAP INDEX are also available. For each dataset, the indicator is the unweighted standard deviation  $D_t$  of average daily interest rates prevailing in each euro area country. Reported rates are considered to be the national rates of country  $c$  if the reporting bank is located there. However, the counterparty of the transaction is not known, and the reported interest rate could thus potentially refer (in part) to transactions with a bank outside country  $c$ . The number of euro area countries  $n_t$  is the number of countries that had adopted the euro in the reference period:

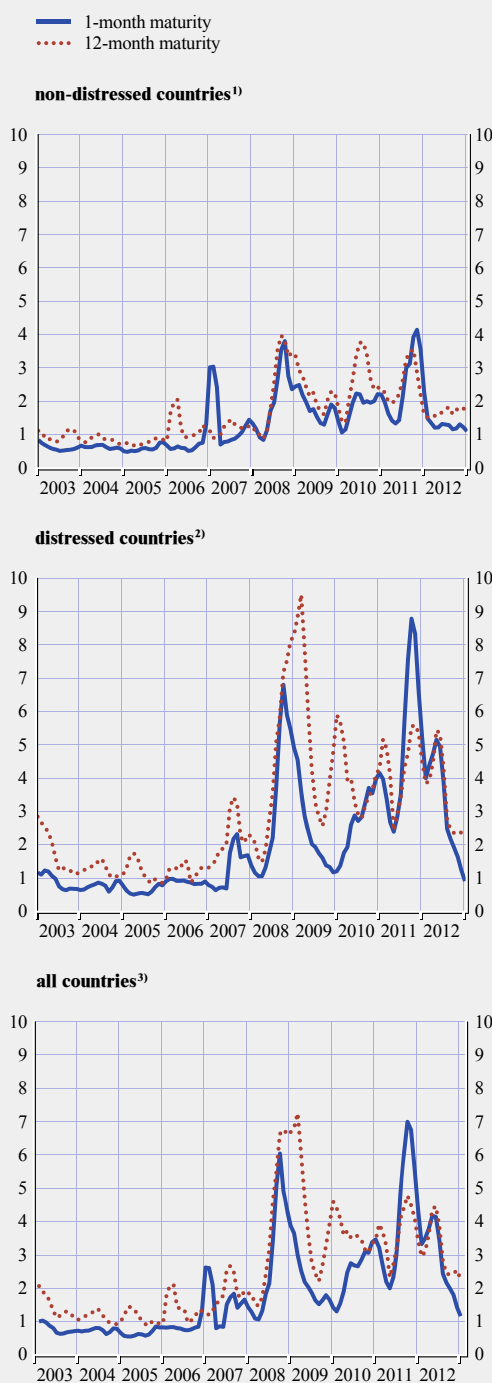
$$D_t = \sqrt{\frac{1}{n_t} \sum_c (r_{c,t} - r_t)^2} \quad (3)$$

where  $r_{c,t}$  is the unweighted average of the interest rate  $r_{i,t}^c$  reported by each of the panel banks  $m_c$  at time  $t$  in country  $c$ :

$$r_{c,t} = \frac{1}{m_c} \sum_{i_t} r_{i_t}^c \quad (4)$$

Chart 3 Cross-country standard deviation of average interbank repo rates across euro area countries (EUREPO)

(61-day moving average: basis points)



Sources: EBF and ECB calculations.

1) AT, BE, DE, FI, FR, LU and NL.

2) ES, GR, IE, IT and PT.

3) AT, BE, DE, ES, FI, FR, GR, IE, IT, LU, NL and PT.

The euro area average  $r_t$  is calculated as the unweighted average of the national average interest rates  $r_{c,t}$ . The data are smoothed by calculating a 61 (business) day centred moving average of the standard deviation, transformed into monthly figures and taking the end-of-month observation of the smoothed series. For indicative series prices (EURIBOR, EUREPO), the data are corrected for obvious outliers. The computed indicator has a monthly frequency.

#### Additional information

The EUREPO is the rate at which one bank offers, in the euro area and worldwide, funds in euro to another bank if in exchange the former receives from the latter the best collateral within the most actively traded European repo market.

### QUANTITY-BASED INDICATORS

Chart 4

#### Borrowing activity in the euro area secured and unsecured markets

##### Non-technical description

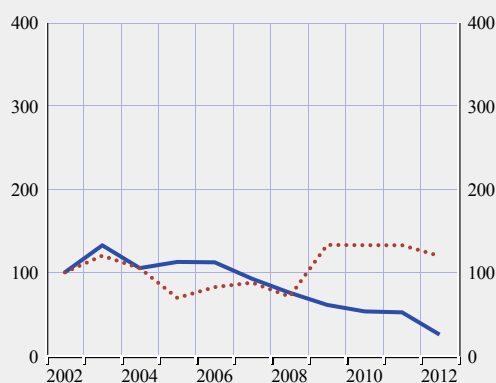
This indicator shows the development of borrowing activity in the euro area, divided into unsecured and secured money markets, and distressed and non-distressed countries. Following the onset of the financial crisis, some segments of the money market developed differently to others. Several indicators show that, overall, the secured/repo market fared much better during the financial crisis than other segments of the interbank market, in particular the unsecured market. This result is not surprising given the fact that the collateralised nature of repo transactions makes them more resilient to heightened credit risk concerns than unsecured transactions. The two charts show that, as counterparty and liquidity risks significantly increased, recourse was indeed made to the secured money market as an alternative to the unsecured market. As expected, the negative development for distressed countries in the unsecured segment is more pronounced than for non-distressed countries. It is also worth pointing out that the transfer to secured markets started well before the outbreak of the financial crisis in 2007. This may reflect the fact that collateralised transactions are more complex in terms of legal and settlements issues, and that today's

Chart 4 Borrowing activity in the euro area secured and unsecured markets

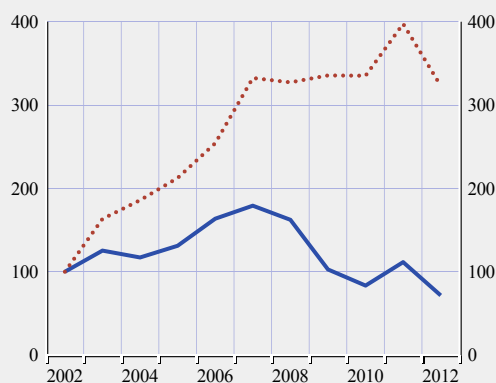
(average daily turnover, indexed on 2002=100)

- total borrowing activity on unsecured money market
- ..... total borrowing activity on money market repo

##### distressed countries



##### non-distressed countries



Source: ECB's Euro Money Market Survey.

non-distressed countries were sophisticated enough in early 2000 to conduct these types of transaction.

**Description**

The data for these charts are related to the Euro Money Market Survey, conducted annually by the ECB with panel banks who report their activity in the different segments of the money market.

To compute the data, we first divided the banks in two sub-panels: distressed countries and non-distressed countries. Then for each sub-panel we add the total borrowing activity on unsecured markets (blue line) and the total borrowing activity on repo markets (red line). The initial numbers correspond to the average daily turnover in the second quarter of each year, with 2002 as the base year.

**Chart 5**

**Geographical counterparty breakdown for secured and unsecured transactions**

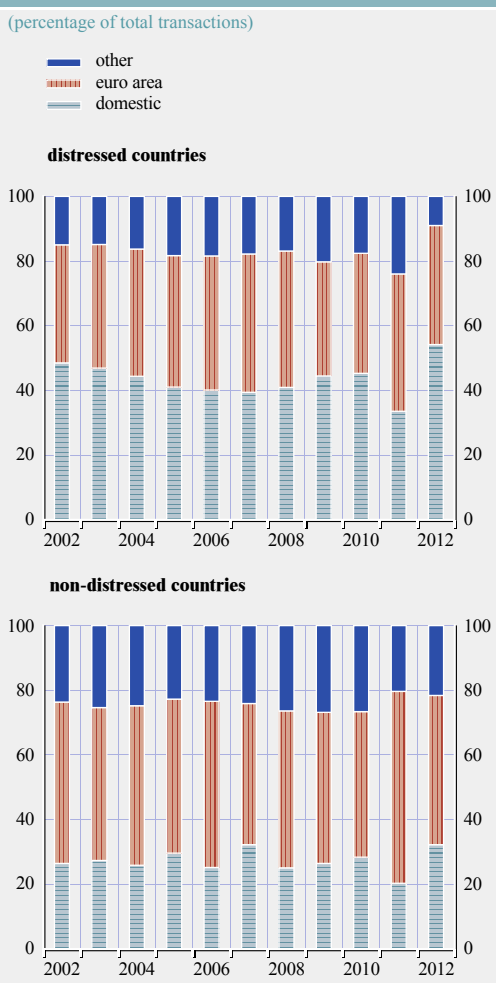
**Non-technical description**

The charts display the shares in percentage points of different geographical locations of counterparties in transactions in the money markets. Secured and unsecured transactions are combined, but the development is mainly driven by secured transactions, as this market segment is larger than the unsecured market. The charts show that the share of domestic transactions is higher for distressed countries, while the share of transactions with other euro area countries is higher for non-distressed countries. Thus, non-distressed countries are more able to conduct cross-border transactions which highlight financial fragmentation between the groups of countries. The increased exposure to domestic counterparties in 2012 for both groups reflects the continuing concerns about the sovereign debt crisis and its spillover to the respective banking systems.

**Description**

The data for these charts are related to the Euro Money Market Survey, conducted annually by the ECB with panel banks who report their activity in the different segments of the money market. In the survey, the banks report their activity in the secured and

**Chart 5 Geographical counterparty breakdown for secured and unsecured transactions**



Source: ECB's Euro Money Market Survey.

unsecured segments and the nature of the counterparty: domestic, inside of the euro area or outside (other). These charts show the aggregation of the breakdown of the overall volumes with each counterparty. Secured transactions include transactions conducted through central counterparties (CCPs).

## Chart 6

### Recourse to the ECB's market operations and standing facilities

#### Non-technical description

The charts show rather clearly a fragmentation between non-distressed and distressed countries, i.e. non-distressed countries are depositing liquidity with the Eurosystem, while distressed countries are borrowing liquidity from the Eurosystem, mainly through the three-year long-term refinancing operations (LTROs).

#### Description

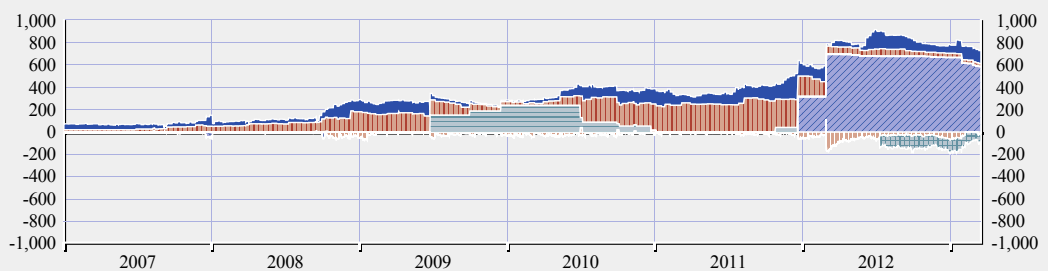
The chart distinguishes between non-distressed and distressed countries. It uses ECB daily data from the liquidity operations. For these two charts, data on one to six-month operations are combined, and data from the marginal lending facility are excluded.

Chart 6 Recourse to the ECB's market operations and standing facilities

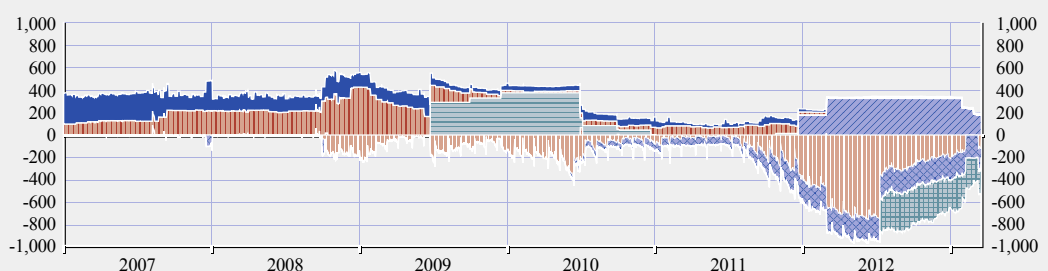
(EUR billions)



#### a) Distressed countries



#### b) Non-distressed countries



Source: ECB.

Chart 7

**Use of cross-border collateral in Eurosystem monetary policy operations**

**Non-technical description**

Since the start of the financial turmoil, there has been a trend away from posting cross-border collateral and towards greater use of domestic collateral in Eurosystem liquidity-providing operations, in particular for distressed countries. This trend has intensified since the onset of the euro area sovereign debt crisis. The greater use of domestic collateral can be attributed both to an increasing home bias among investors and to an increase in the use of self-originated marketable assets as collateral.

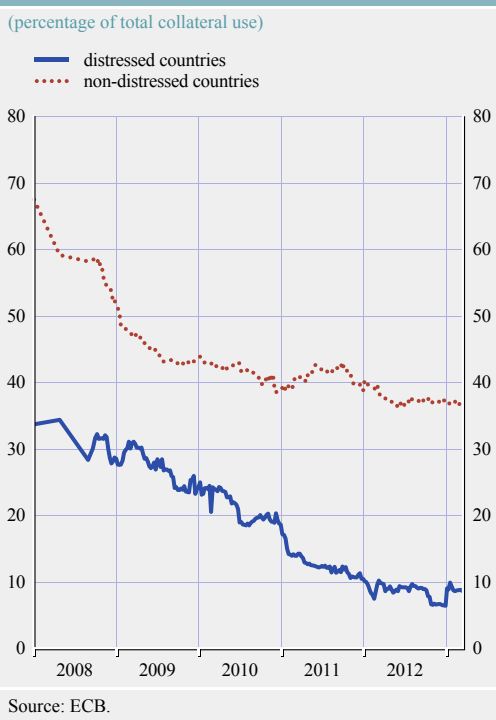
**Description**

The chart distinguishes between distressed and non-distressed countries. It uses weekly data from the Use of Collateral Database (UCDB) and combines the residence information on the counterparty and the issuer of the asset.

**Additional information**

An asset is regarded as being used on a cross-border basis when the issuer of the asset and the counterparty using it as collateral with the Eurosystem reside in different jurisdictions.

**Chart 7 Use of cross-border collateral in Eurosystem monetary policy operations**



**OTHER INDICATOR**

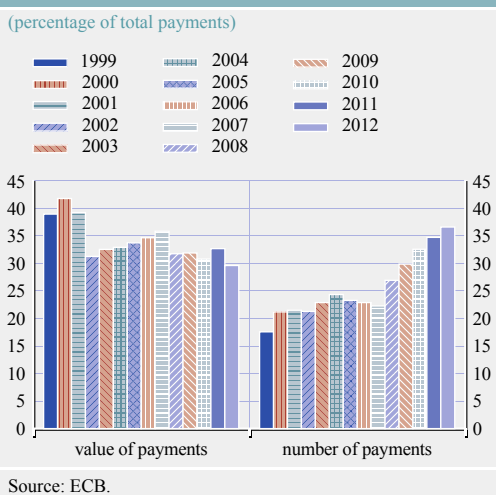
Chart 8

**TARGET2's share of inter-Member State payments in terms of volume and value**

**Non-technical description**

The chart presents the share of cross-border payments in the overall traffic settled in TARGET2 (both in terms of number and value of payments). The share of the number of cross-border payments grew since 2008 following the launch of the TARGET2 single shared platform, as the new system offered banks further opportunities to centralise their payments processing.

**Chart 8 TARGET2's share of inter-Member State payments in terms of volume and value**



As regards the share of cross-border payments in value terms, the drop observed in 2008 mainly results from a change in the calculation methodology. In subsequent years, the strained market activity following the financial crisis explains why it has not grown in a way similar to the cross-border share in number of payment.

### Description

The first indicator shows the share by value of payments between EU Member States (inter-Member State payments) in the total value of payments processed in TARGET2. With the exception of some irregular increases/decreases recorded in 2000, 2001 and 2008 (following closure of other euro payment systems or changes in the statistical method), a general increase can be observed up to 2007, reflecting the positive contribution of TARGET1 to the integration of large-value payment activities. However, from 2008 onwards, the share remains roughly stable or declines slightly, owing to a deterioration in market conditions with, in particular, fewer cross-border money market transactions being settled in TARGET2. While these money market transactions are relatively small in number, their average value is much higher than that of other payments, which is why market conditions affect the cross-border share in terms of value more than in terms of volume.

The second indicator shows the share by number of payments between EU Member States (inter-Member State payments) in the total number of payments processed in TARGET2. The graph shows a general increase in this indicator, in particular from 2008 onwards. Before 2008, in the decentralised TARGET1 system, multi-country banks (or banking groups) had accounts in most countries in which they operated. Consequently, a large share of the traffic they generated in TARGET1 was treated as “domestic”. In TARGET2, these banking groups concentrate their intraday liquidity management and their payment processing in one account, usually with the national central bank of the country in which they have their head office. For that reason, a higher share of their payments traffic is now “cross-border”.

In spite of the fact that both indicators include transactions in connection with monetary policy operations, their impact on the trends is considered negligible. In principle, as such transactions are treated as “domestic”, they would typically increase the value of domestic payments, thereby reducing the cross-border share. However, the impact of these operations is extremely limited compared to the average daily turnover of TARGET2, which amounts €2.7 trillion. Even the LTROs do not significantly change the overall picture, as the value they generate in TARGET on one specific day is marginal when spread over an entire year.

### Additional information

TARGET is the real-time gross settlement system for the euro. A second-generation system (TARGET2) operating on a single shared platform was launched in November 2007 and fully replaced the former decentralised system in May 2008. In TARGET2, an “inter-Member State payment” is a payment between counterparties who maintain accounts with different national central banks participating in TARGET2. An “intra-Member State payment” is a payment between counterparties who maintain accounts with the same national central bank.



## SECURITIES MARKET INDICATORS

## PRICE-BASED INDICATORS

Chart 9

## Dispersion in five-year CDS premia across the euro area

## Non-technical description

We consider here the dispersion of credit default swap (CDS) premia of different sectors to highlight the degree of dispersion of the cost of funding for different entities at euro area level (while the CDS premium primarily reflects the cost of insuring debt against default, the premium can also be regarded as a proxy for the cost of funding). The higher the dispersion is at industry level for the euro area (so removing possible country specialisations that could bias the dispersion), the lower the integration is for the financing of these entities (sovereigns, banks and telecoms) at euro area level.

## Description

These indicators are computed as the standard deviation of five-year CDS premia for different sectors at the euro area level. The three sectors considered are sovereigns, telecommunications and banks to constitute groups of homogenous entities with comparable credit risk at the euro area level.

## Additional information/notes

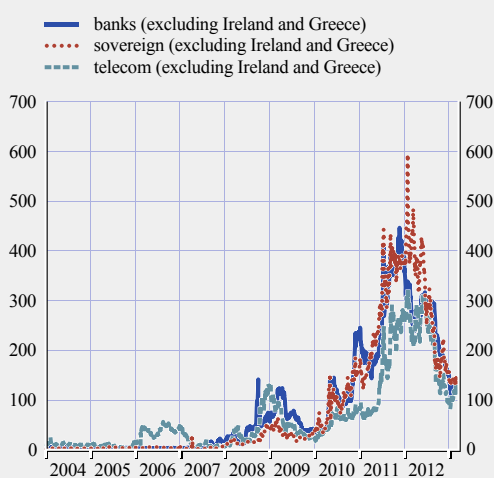
The data do not include Greece and Ireland. Greece is excluded owing to very high sovereign CDS premia, and Ireland is excluded owing to the very high CDS premia of its telecommunications company.

“Sovereign” includes Austria, France, Germany, Italy, the Netherlands, Portugal and Spain. Commercial banks include ABN AMRO (NL), Alpha Bank (GR), Allied Irish Banks (IE), Banca Monte dei Paschi di Siena (IT), Banca Popolare di Milano (IT), Banco Comercial Português (PT), Banco Sabadell (ES), Banco Espírito Santo (PT), Banco Santander Central Hispano (ES), Erste Bank der österreichischen Sparkassen (AT), Bank of Ireland (IE), Bayerische HypoVereinbank (DE), BNP Paribas (FR), Commerzbank (DE), Crédit Agricole (FR), Deutsche Bank (DE), Dexia Group (BE), EFG Eurobank Ergasias (GR), Fortis NL (NL), Intesa Sanpaolo SPA (IT), Mediobanca (IT), Natixis (FR), National Bank of Greece (GR), Nordea Bank (FI), Piraeus Group Finance PLC (GR), Société Générale (FR) and UniCredito Italiano (IT).

“Telecom” includes Deutsche Telekom (DE), France Telecom (FR), Hellenic Telecommunications Organization (GR), KPN (NL), Portugal Telecom (PT), Telecom Italia (IT), Telefónica (ES) and Telekom Austria (AT).

Chart 9 Dispersion in five-year CDS premia across the euro area

(daily data; basis points)



Sources: Thomson Reuters and ECB calculations.

Chart 10

### Country and sector dispersions in euro area equity returns

#### Non-technical description

This chart presents the dispersion in equity returns, across sectors and across countries, in the euro area for a period of over 35 years to reflect structural changes in the aggregate euro area equity market. Under full financial segmentation, limited diversification opportunities for investors mean that they demand a high return for holding shares in undiversified firms, so cross-country dispersion (which reflects not only cross-border fragmentation, but also the different sectoral composition of each country's economy) should be high relative to cross-sectoral dispersion (which also reflects the different performance of the underlying sectors). By contrast, in an integrated financial market, there is no financial premium on sectoral or geographical diversification and greater specialisation is affordable. This should reduce the gap between cross-country and cross-sectoral dispersions. Assuming sectoral compositions and performances remain constant over the sample period, three periods can be distinguished: 1) the pre-EMU period in which cross-country dispersion was significantly higher than cross-sectoral dispersion; 2) the pre-crisis EMU period after 1999 in which cross-country fragmentation has been eliminated and the two dispersions get closer; 3) the crisis period, in which fragmentation has increased, as shown by the increase in both dispersion indicators as of 2007.

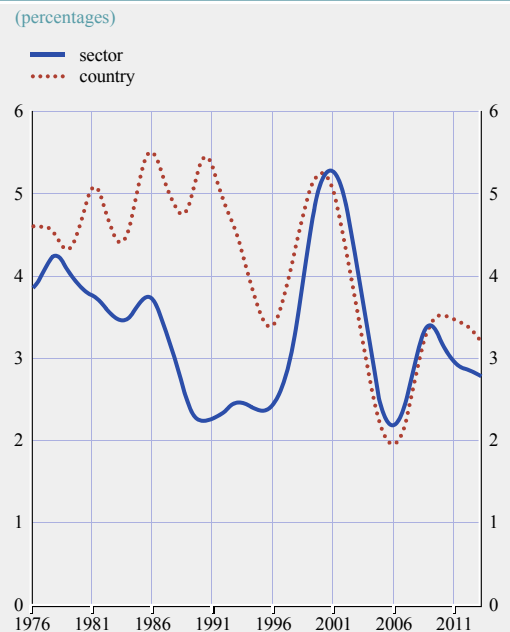
#### Description

This indicator is derived by calculating the cross-sectional dispersions in both sector and country index returns for the euro area countries. Data are calculated from January 1973 onwards. They include (reinvested) dividends and are denominated in euro. The indicator has a monthly frequency. The cross-sectional dispersions are filtered using the Hodrick-Prescott smoothing technique, which provides a smooth estimate of the long-term trend component of the series. The smoothing parameter  $\lambda$  is equal to 14,400.

#### Additional information

This indicator is based on an approach first presented by Adjaouté and Danthine, see Adjaouté, K. and Danthine, J.P. (2003), "European Financial Integration and Equity Returns: A Theory-based Assessment", in Gaspar, V. et al. (eds.), *Second ECB Central Banking Conference: The transformation of the European financial system*, ECB, May 2003.

Chart 10 Country and sector dispersions in euro area equity returns



Sources: Thomson Reuters and ECB calculations.  
Note: Cross-sectional dispersions are filtered.

Chart II

### Proportion of variance in euro area country equity returns explained by euro area and US stock market shocks

#### Non-technical description

This chart compares the extent to which local euro area equity markets are sensitive to US market shocks and euro area-wide shocks. Over the last decade, euro area-wide volatility has been the main determinant of local stock market volatility, but the share of US volatility incorporated in local euro area equity market volatility has intensified. Between 2004 and 2007 only 17% of euro area local equity market volatility could be attributed to US volatility, while this reached 25% in the period from 2008 to 2012 after the collapse of Lehman Brothers.

#### Description

This chart presents the proportion of total domestic equity volatility of country stock returns explained by euro area and US shocks.

To quote the original source,<sup>2</sup> the rationale of the analysis is as follows: “An important implication of integration is that asset prices should only react to common news. If there are no barriers to international investment, purely local shocks can generally be diversified away by investing in assets from different regions. Local shocks should therefore not constitute a systematic risk.”

The source goes on to say: “For the purpose of examining integration in local euro area equity markets, we need to distinguish between global and euro area-wide effects on equity returns in the euro area. To this end, the return on US stock markets is used as a proxy for world news, while the return on a euro area-wide stock market index, corrected for US news, is used as the euro factor.”

#### Additional information/notes

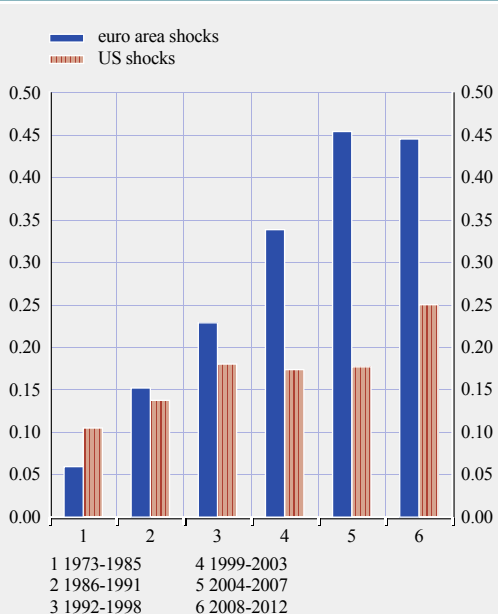
The variance ratio is derived by assuming that country-specific shocks are uncorrelated across countries and that they similarly do not correlate with euro area and US benchmark indices.

The influence of euro area shocks may have been greater in very recent years.

For detailed calculations, see Baele *et al.* (2004).

To compare the relevance of euro area and US shocks for average changes in country returns, the indicators report the variance ratios, i.e. the proportion of total domestic equity volatility explained

Chart II Proportion of variance in euro area country equity returns explained by euro area and US stock market shocks



Sources: Thomson Reuters and ECB calculations.  
Note: Calculations based on equity market indices at weekly frequency (1973-2012).

<sup>2</sup> Baele, L., Ferrando, A., Hördahl, P., Krylova, E. and Monnet, C., “Measuring financial integration in the euro area”, Occasional Paper Series, No 14, ECB, April 2004.

by euro area and US shocks respectively. The model-based indicator is derived by assuming that the total variance of individual country-specific returns is given by:

$$\sigma_{c,t}^2 = h_{c,t} + (\beta_t^{eu})^2 \sigma_{eu,t}^2 + (\beta_t^{us})^2 \sigma_{us,t}^2 \quad (5)$$

where  $h_{c,t}$  is the variance of the local shock component. The euro area variance ratio is then given by:

$$VR_{c,t}^{eu} = \frac{(\beta_t^{eu})^2 \sigma_{eu,t}^2}{\sigma_{c,t}^2} \quad (6)$$

and the US variance ratio by a corresponding equation. The conditional variances are obtained using a standard asymmetric GARCH (1,1) model.

For each period, the indicators report the unweighted average of the relative importance of euro area-wide factors, other than US equity market fluctuations, for the variance of individual euro area countries' equity market indices (the "variance ratio"), and the unweighted average of the relative importance of US equity market fluctuations for the variance of euro area equity markets.

Data refer to Datastream market indices, and have been calculated on a weekly basis since January 1973.

## Chart 12

### Euro area and US shock spillover intensity in individual euro area countries

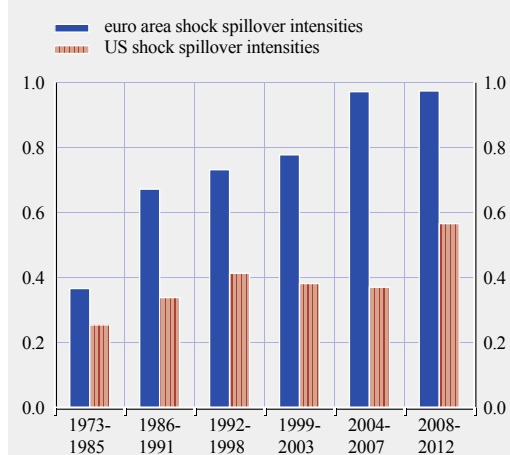
#### Non-technical description

This chart compares the extent to which local euro area equity markets are sensitive to US market shocks and euro area-wide shocks. Over the last decade, euro area-wide shocks have been transmitted almost one-to-one to local euro area equity markets, which can be interpreted as sign of strong integration of equity markets among euro area countries. Transmission of US shocks (which can be seen as a proxy for global shocks) has intensified since the collapse of Lehman Brothers: between 2004 and 2007 almost 40% of US shocks were transmitted to euro area markets, but this has risen to 60% since Lehman.

#### Description

Empirical evidence suggests that equity returns are driven to a significant extent by global factors. For this reason, both euro area-wide shocks and US shocks (as a proxy for global factors) are included in the assessment of common news. To calculate the relative importance of euro area-wide and US stock market fluctuations for local stock market returns, the stock market returns of

Chart 12 Euro area and US shock spillover intensity in individual euro area countries



Sources: Thomson Reuters and ECB calculations.  
Note: Calculations based on equity market indices at weekly frequency (1973-2012).

individual countries are modelled as having both an expected component and an unexpected one,  $\varepsilon_{c,t}$ . The unexpected component is then decomposed into a purely local shock ( $e_{c,t}$ ) and a reaction to euro area news ( $\varepsilon_{eu,t}$ ) and world (US) news ( $\varepsilon_{us,t}$ ):

$$\varepsilon_{c,t} = e_{c,t} + \beta_{c,t}^{eu} \varepsilon_{eu,t} + \beta_{c,t}^{us} \varepsilon_{us,t} \quad (7)$$

The expected return is obtained by relating euro area and US returns to a constant term and to the returns in the previous period. The conditional variance of the error terms is governed by a bivariate asymmetric GARCH (1,1) model.

$\beta$  represents the country-dependent sensitivity to euro area or US market changes (of the unexpected component). The analysis is performed over the periods 1973-1985, 1986-1991, 1992-1998, 1999-2003, 2003-2008 and 2008-2012. The reported indicator is the cross-country unweighted average of country-specific sensitivities (betas). A reported beta close to one in the chart indicates that on average all euro area countries respond to the corresponding shock (from either the euro area or the United States). In a well-integrated euro area, the beta associated to the euro area shock should be close to one.

**Additional information**

To distinguish global shocks from purely euro area shocks, it is assumed that euro area equity market developments are partly driven by events in the US market. It is furthermore assumed that the proportion of local returns that is not explained by common factors is entirely attributable to local news.

**Chart 13**

**Dispersion of euro area ten-year sovereign bond yields**

**Non-technical description**

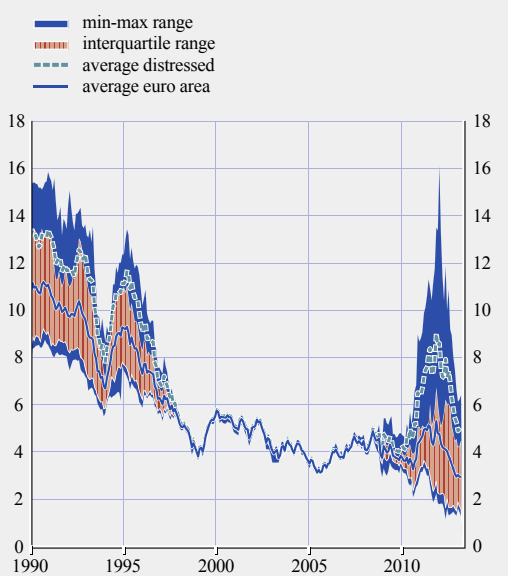
The chart presents the average evolution and dispersion of euro area sovereign bond yields. In a well-integrated market, there should be low dispersion, because investors will not demand such a high premium to compensate for the risk of idiosyncratic shocks, while in a fragmented market, dispersion is higher.

**Description**

The shaded areas represent the min-max range and the interquartile range of individual bond yields for the country composition of the euro area as in 2011. The yields for Greece, Cyprus, Estonia, Luxembourg, Malta and Slovenia are excluded owing to infrequent or a lack of observations.

**Chart 13 Dispersion of euro area ten-year sovereign bond yields**

(percentages)



Sources: Bloomberg and ECB calculations.

Chart 14

**Sovereign and bank CDS premia – euro area and United States**

**Non-technical description**

A tight link between sovereign and bank creditworthiness is clearly visible in the high degree of correlation between sovereign CDS premia and bank CDS premia in euro area countries. This high correlation illustrates the self-reinforcing loop between bank and sovereign risks, with doubts about the solvency of the sovereigns feeding doubts about the solvency of the banks, and vice versa. Such dynamics are much weaker in the United States where the CDS premia of sovereigns and banks are less correlated.

The self-reinforcing loop between bank and sovereign risk, characterised by tight bank-sovereign linkages (in particular in non-AAA-rated euro area countries), is one of the causes of the increasing heterogeneity of sovereign bond yields (particularly the divergence between AAA-rated countries and non-AAA-rated countries). This phenomenon (tight bank-sovereign linkages on the periphery) has an impact on bond market integration in the euro area (and consequently on the integration of the funding markets for corporates and banks).

**Description**

The euro area bank CDS premium is calculated as a weighted average of CDS premia for the main euro area banks (one bank per country weighted by the national capital key), and the euro area sovereign CDS premium is calculated as a weighted average of national sovereign CDS premia. For the United States, the bank CDS premium is calculated as the median of CDS premia for the eight largest US banks and the sovereign CDS premium is the CDS premium for the US sovereign. All the CDS premia considered are at the five-year maturity. Each point on the chart represents one day, while each colour represents one quarter (from 2010 Q1 to 2012 Q4). Any point on the diagonal line would indicate a one-for-one relationship between bank and sovereign CDS premia.

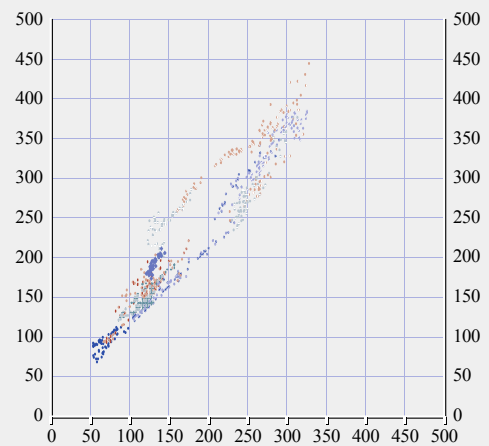
**Chart 14 Sovereign and bank CDS premia – euro area and United States**

(basis points; Q1 2010 – Q1 2013)

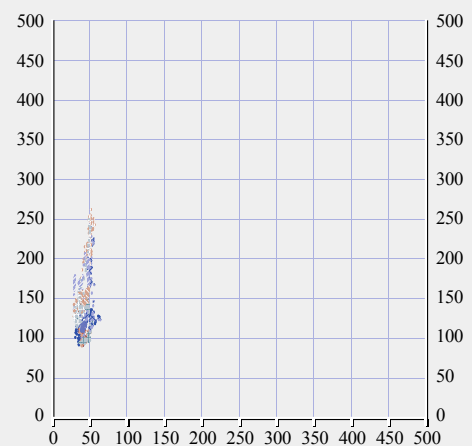
x-axis: sovereign CDSs  
y-axis: bank CDSs

- 2010 Q1
- 2010 Q2
- 2010 Q3
- 2010 Q4
- 2011 Q1
- 2011 Q2
- 2011 Q3
- 2011 Q4
- 2012 Q1
- 2012 Q2
- 2012 Q3
- 2012 Q4
- 2013 Q1

**euro area**



**United States**



Sources: Thomson Reuters and ECB calculations.

Chart 15

### Equity and government bond market integration based on common factor portfolios

#### Non-technical description

This indicator measures integration in the euro area equity and government bond markets via the explanatory power of common factor portfolios. For each calendar year, these portfolios are formed on the basis of a principal component analysis and used in a simple regression framework to explain equity and bond market returns for each country. The measure is then computed as an average (median) R-square across countries. In general, a higher measure indicates a more integrated market, where 1 implies perfect integration and 0 entails no integration.

#### Description

This measure of financial market integration for calendar year  $t$  is computed as the cross-sectional mean (median)  $R^2$  that is obtained from estimating the following regression separately for each country  $i$ :

$$R_{i,t,\tau} = \alpha_{i,t} + \sum_{k=1}^K \beta_{i,t}^k \theta_{i,t}^k + \varepsilon_{i,t,\tau} \quad (8)$$

Where  $R_{i,t,\tau}$  is the market return in country  $i$  on trading day  $\tau$  within year  $t$ , and  $\theta_{i,t}^k$  is the return on the  $k$ -th common factor portfolio on the same day. The  $K$  common factor portfolios are obtained via principal component analysis, and it is assumed throughout that  $K=3$ . The weights (eigenvectors) for the factor portfolios in year  $t$  are calculated using data from year  $t-1$ .

In order to obtain a measure that is comparable across years, we require daily return data (on broad equity market indices and ten-year benchmark bonds) to be available from the beginning of the sample.

#### Additional information

The analysis is based on Pukthuanthong, K. and Roll, R., "Global market integration: An alternative measure and its application", *Journal of Financial Economics*, Vol. 94, No 2, November 2009, pp. 214-232.

Chart 15 Equity and government bond market integration based on common factor portfolios

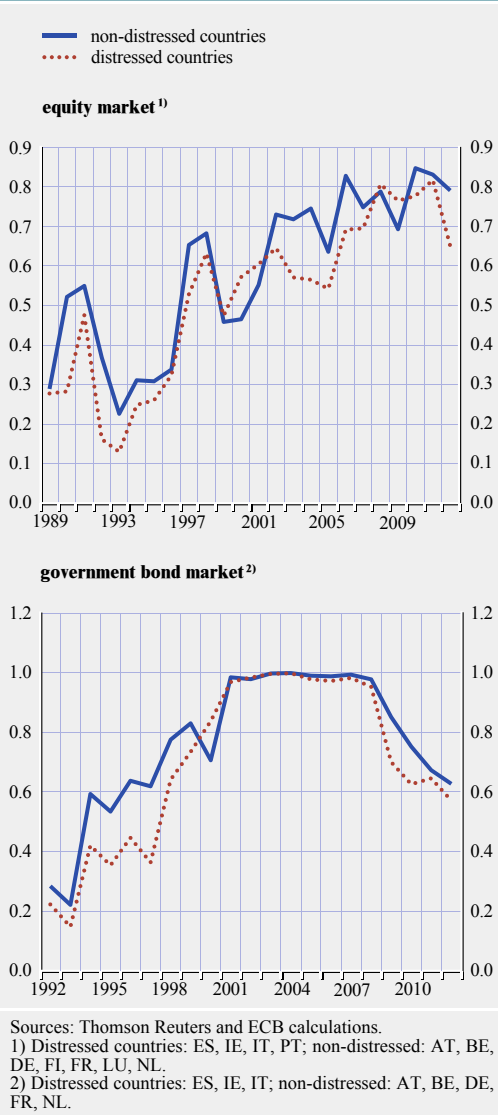


Chart 16

**Equity market segmentation in distressed and non-distressed countries**

**Non-technical description**

This indicator measures segmentation (the opposite of integration) of euro area equity markets via valuation differentials. For each calendar month, the absolute difference between the stock market valuation level (based on analyst forecasts) of a given country and the euro area average is computed, based on industry portfolios that allow for different valuation levels in different industries. These absolute differences are then aggregated by calculating the median across two groups of countries (distressed and non-distressed, respectively). A larger value indicates a higher level of market segmentation (i.e. a lower level of market integration). A measure of zero implies perfect integration.

**Description**

The segmentation measure for country *i* is computed as

$$Seg^i = \sum_{k \in K} \omega_k^i |EY_k^i - \overline{EY}_k| \tag{9}$$

Where  $EY_k^i$  is the average earnings yield (the inverse of the price-earnings ratio) based on analyst forecasts for industry sector *k* in country *i*,  $\overline{EY}_k$  is the respective euro area average, and  $\omega_k^i$  is the share of sector *k* in the stock market capitalisation of country *i*.

**Additional information**

The analysis is based on Bekaert, G., Harvey, C.R., Lundblad, C.T. and Siegel, S., “What segments equity markets?”, Review of Financial Studies, Vol. 24, No 12, October 2011.

**QUANTITY-BASED INDICATORS**

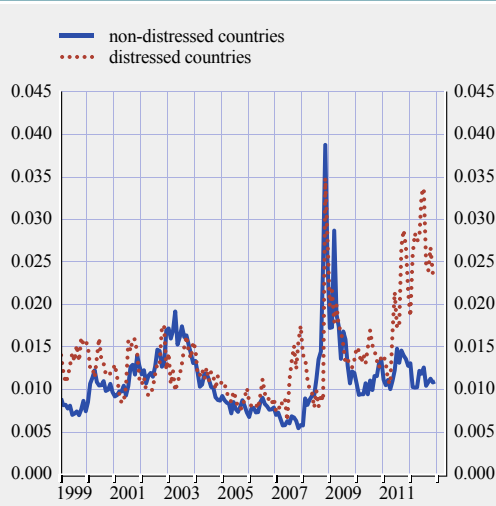
Chart 17

**Share of MFI cross-border holdings of debt securities issued by euro area and EU corporates and sovereigns**

**Non-technical description**

Cross-border holdings by euro area MFIs of bonds issued by non-financial borrowers (sovereign and

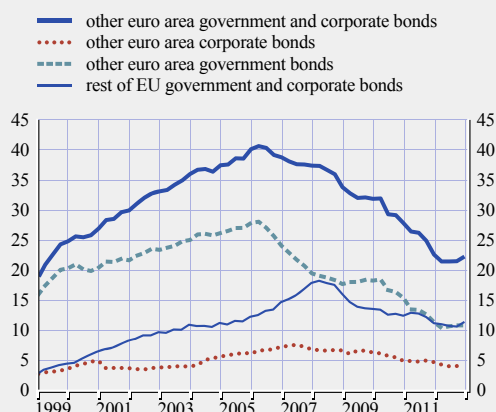
**Chart 16 Equity market segmentation in distressed and non-distressed countries**



Sources: Thomson Reuters and ECB calculations.  
Note: Distressed countries: ES, GR, IE, IT, PT; non-distressed: AT, BE, DE, FI, FR, NL.

**Chart 17 Share of MFI cross-border holdings of debt securities issued by euro area and EU corporates and sovereigns**

(percentage of total holdings, excluding the Eurosystem)



Source: ECB.



corporate) of other euro area countries are a relevant quantity indicator of financial integration. The indicator points to decreasing integration in these markets in recent years.

### Description

See Charts 22 to 25 in the banking section.

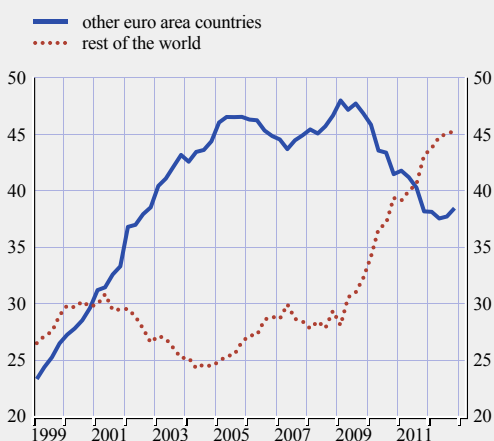
### Additional information

See Charts 22 to 25 in the banking section.

## Chart 18-19

**Chart 18 Investment funds' holdings of debt securities issued in other euro area countries and the rest of the world**

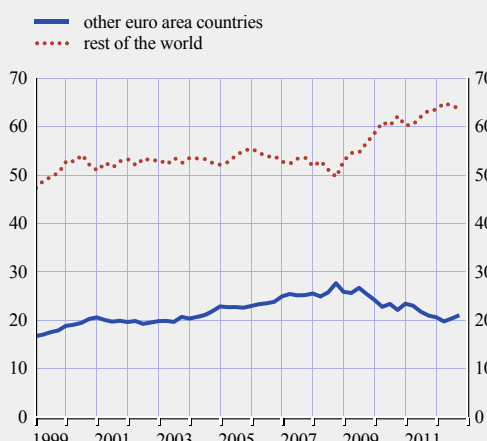
(percentage of total holdings of debt securities)



Source: ECB.

**Chart 19 Investment funds' holdings of equity issued in other euro area countries and the rest of the world**

(percentage of total holdings of equity)



Source: ECB.

### Non-technical description

These two indicators are used to assess the contribution of institutional investors to financial integration in the euro area.

### Description

The first indicator shows the share of euro area investment funds' total holdings of all securities other than shares (including money market paper) issued by residents of euro area countries other than the country in which the investment fund is located and by residents of the rest of the world (RoW). The second indicator provides the same measure for the share of euro area investment funds' combined holdings of all shares and other equity (excluding investment fund shares/units) issued by residents of the euro area outside the country in which the investment fund is located and by residents of the rest of the world.

The compositions of the two areas are those prevailing during the reference period.

### Additional information

These two indicators are constructed on the basis of the balance sheets of euro area investment funds (other than money market funds, which are included in the MFI balance sheet statistics).

A complete list of euro area investment funds is published on the ECB's website. Further information on these investment fund statistics can be found in the Manual on investment fund statistics. Since December 2008 harmonised statistical information has been collected and compiled on the basis of Regulation ECB/2007/8 concerning statistics on the assets and liabilities of investment funds.

**Chart 20**

**The degree of cross-border holdings of equity issued by euro area residents**

**Non-technical description**

This chart shows the degree of cross-border holdings of equity securities among euro area countries. This indicator measures the degree of stock market integration at the euro area level.

**Description**

Intra-euro area is defined as the share of equity issued by euro area residents and held by other euro area residents (excluding central banks):

$$\frac{\sum_i \sum_{j \neq i} Outstock_{ij,t}}{\sum_i MKT_{i,t} + \sum_i TOutstock_{i,t} - \sum_i TInstock_{i,t}} \quad (10)$$

$i, j \in \{\text{euro area countries}\}$

where  $Outstock_{ij}$  denotes the value of equity issued by residents of euro area country  $i$  and held by residents of euro area country  $j$ ;  $MKT_i$  stands for stock market capitalisation in country  $i$ ;  $TOutstock_i$  is the total foreign equity held by country  $i$  and  $TInstock_i$  is the total foreign liabilities of country  $i$ .

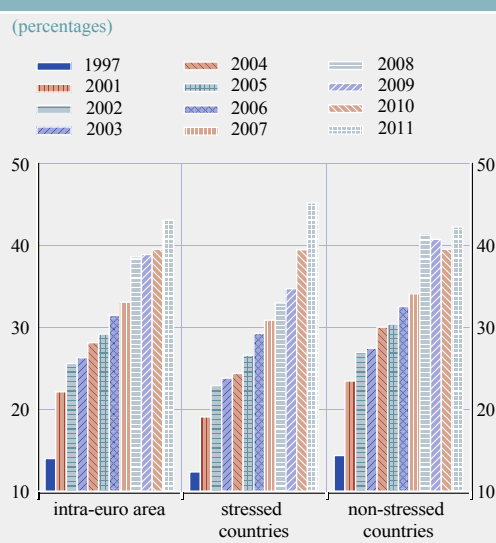
Extra-euro area is defined as the share of euro area equity held by non-residents of the euro area (excluding central banks). The measure takes the following form:

$$\frac{\sum_i \sum_r Outstock_{ir,t}}{\sum_r MKT_{r,t} + \sum_r TOutstock_{r,t} - \sum_r TInstock_{r,t}} \quad (11)$$

$i \in \{\text{euro area countries}\}$   
 $r \in \{\text{rest of the world}\}$

where  $Outstock_{ir}$  denotes the value of equity issued by residents of euro area country  $i$  and held by non-residents of the euro area  $r$  (rest of the world);  $MKT_r$  stands for market capitalisation in country  $r$ ;  $TOutstock_r$  is the total foreign equity held by country  $r$  and  $TInstock_r$  is the total foreign liabilities of country  $r$ . The computed indicator has an annual frequency.

**Chart 20 The degree of cross-border holdings of equity issued by euro area residents**



Sources: IMF, Thomson Reuters and ECB calculations.  
Note: Intra-euro area is defined as the share of equity issued by euro area residents and held by residents of other euro area countries (excluding central banks).

**BANKING MARKET INDICATORS**

**STRUCTURAL INDICATOR**

**Chart 21**

**Dispersion of the total assets of foreign branches and subsidiaries of euro area banks across euro area countries**

**Non-technical description**

This indicator describes the development over time of the assets of foreign branches and subsidiaries of euro area banks within euro area countries other than the home country as a share of the total assets of the euro area banking sector, with higher shares implying higher cross-border activity. Overall, this share continues to be rather limited across the majority of countries. However, it is noteworthy that, owing to the crisis, the median degree of cross-border penetration of banking institutions has fallen in recent years.

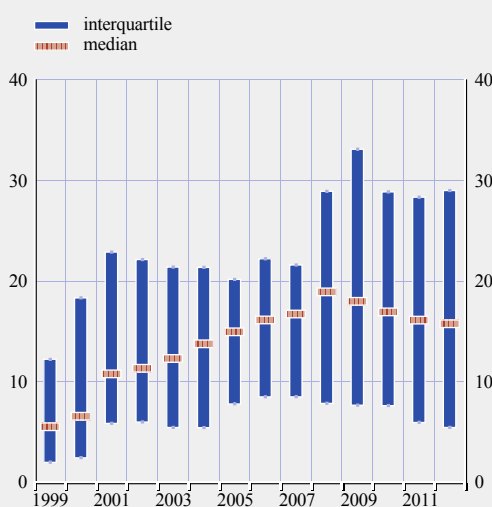
**Description**

The share of total assets of foreign branches and subsidiaries over total assets of the national banking system is calculated for each country of the euro area. Then, the level and dispersion of these country shares are described by the following measures: the first quartile (25th percentile), the median (50th percentile) and the third quartile (75th percentile).

These computed indicators have an annual frequency. The composition of the euro area is that applicable during the respective reference period.

**Chart 21 Dispersion of the total assets of foreign branches and subsidiaries of euro area banks across euro area countries**

(percentage of the total assets of the euro area banking sector)



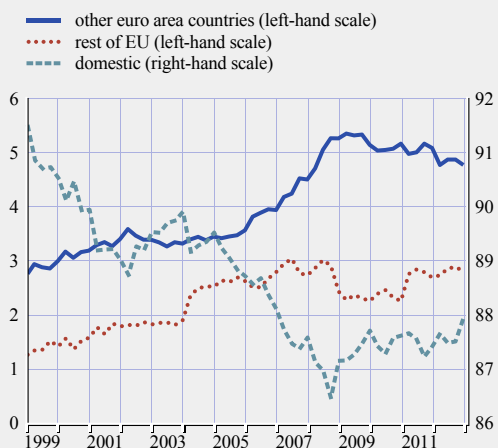
Source: ECB.

## ACTIVITY-BASED INDICATORS

### Chart 22-25

#### Chart 22 MFI loans to non-MFIs: outstanding amounts by residency of counterparty

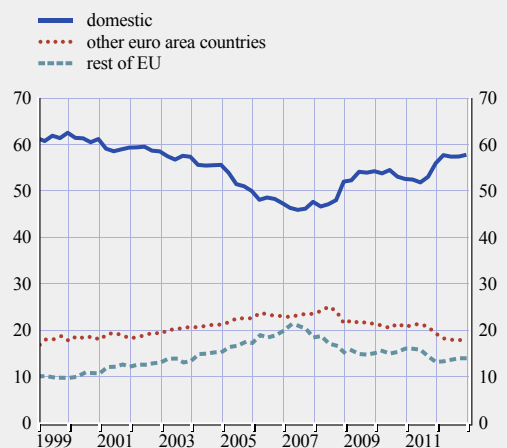
(percentage of total lending excluding the Eurosystem)



Source: ECB.

#### Chart 23 MFI loans to MFIs: outstanding amounts by residency of counterparty

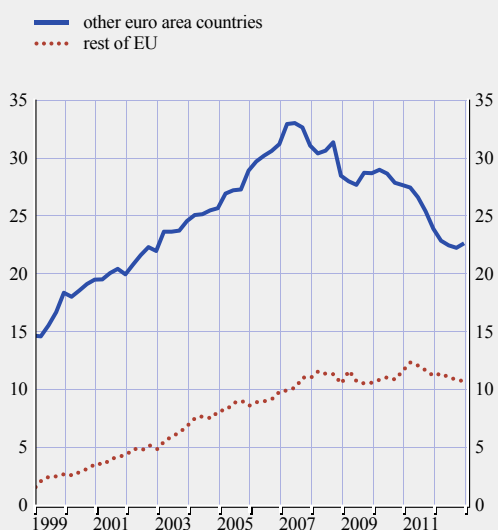
(percentage of total lending excluding the Eurosystem)



Source: ECB.

#### Chart 24 MFI holdings of securities issued by MFIs: outstanding amounts by residency of counterparty

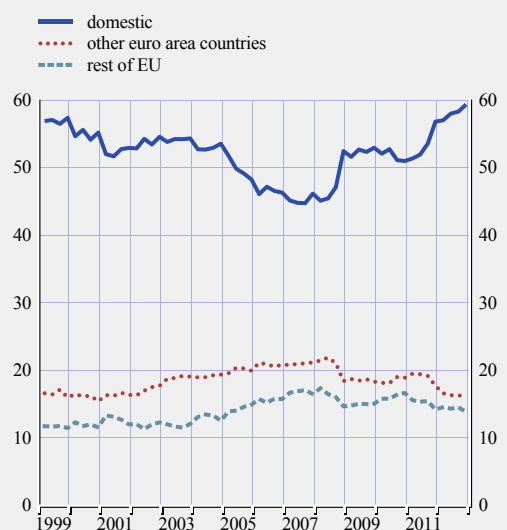
(percentage of total holdings)



Source: ECB.

#### Chart 25 MFI deposits from MFIs: outstanding amounts by residency of counterparty

(percentage of total deposits excluding the Eurosystem)



Source: ECB.

### Non-technical description

This set of indicators displays the relevance of cross-border balance sheet connections for euro area monetary financial institutions (MFIs). The indicators show that euro area wholesale banking markets are far more integrated than retail markets.

### Description

The indicators in Charts 22 and 23 show loans granted by euro area MFIs (excluding the Eurosystem) to non-MFIs and other MFIs, broken down by residency of counterparty. The compositions of the euro area and the rest of the EU are those applicable during the respective reference periods. In Chart 24, a similar indicator is shown for securities issued by euro area MFIs and held by euro area and other EU MFIs. In Chart 25, a similar indicator is shown for deposits placed in the euro area by non-MFIs. Inter-MFI borrowing and lending is also conducted through CCPs. In cases where these CCPs are not themselves MFIs, these volumes are not included in the inter-MFI loans and deposits in Charts 23 and 25. (For more information, see Box 3 of the September 2012 issue of the ECB's Monthly Bulletin.)

These indicators have a quarterly frequency.

### Additional information

These indicators are constructed on the basis of the national aggregated MFI balance sheet statistics reported to the ECB at monthly and quarterly frequencies. These data cover the MFI sector excluding the Eurosystem and also include data on money market funds (MMFs). It is not yet possible to derive indicators that strictly refer to banking markets. Consequently, as MMFs typically invest in inter-MFI deposits and short-term securities, the indicators displaying data for these assets are somewhat affected by the MMFs' balance sheet items.

These balance sheet items are transmitted on a non-consolidated basis. This means that the positions with foreign counterparties include those with foreign branches and subsidiaries.

### Chart 26

#### Interest rates on new loans to euro area non-financial corporations

#### Non-technical description

An important aspect of the gains from increasing financial integration is that lower financing costs reached a significant level of convergence across countries. The strong convergence across countries in bank rates charged to non-financial corporations for new loans is clearly visible.

#### Description

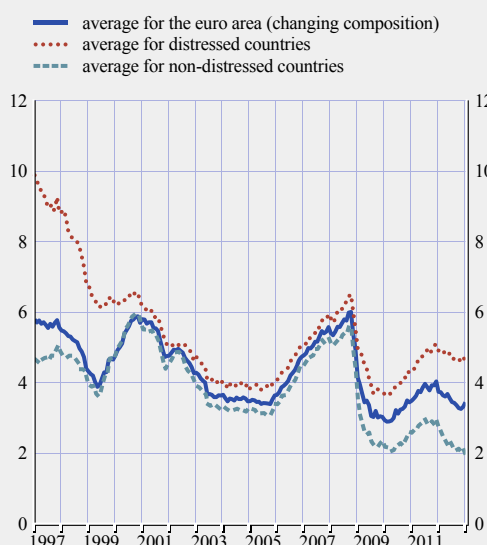
This indicator displays the average of MFI interest rates (MIRs) on new business reported to the ECB.

#### Additional information

These statistics are based on MIRs on new business reported to the ECB at monthly frequency since January 2003.

Chart 26 Interest rates on new loans to euro area non-financial corporations

(percentages)



Source: ECB.  
Note: All euro area countries, changing composition. Latest observation: September 2012.

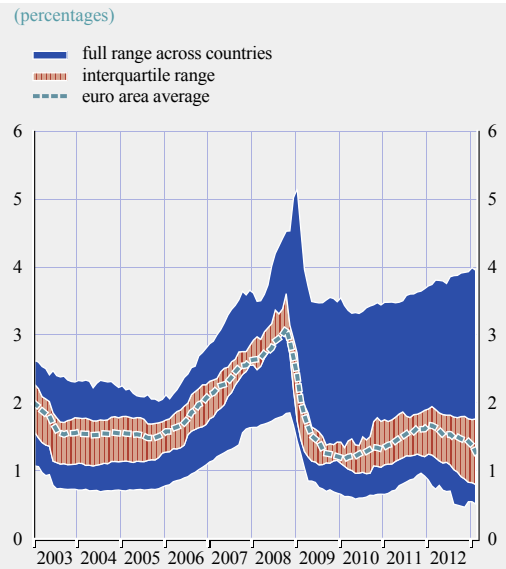
Chart 27

**Interest rates on MFI deposits for households in the euro area**

**Non-technical description**

This chart shows the dispersion of deposit rates in the euro area. The increasing dispersion highlights the fragmentation of retail markets.

**Chart 27 Interest rates on MFI deposits for households in the euro area**



Sources: ECB and ECB calculations.  
 Notes: The deposit rates are aggregated using outstanding amounts. Latest observation: September 2012.

Chart 28

**MFI loans to non-financial corporations**

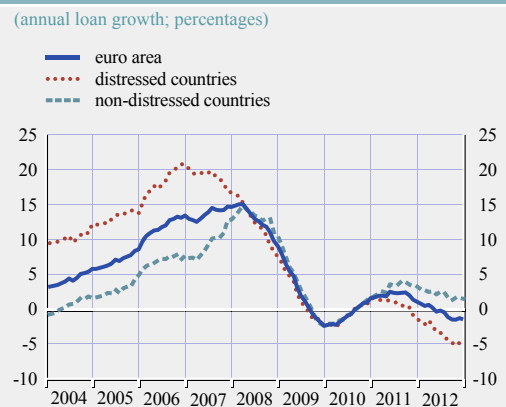
**Non-technical description**

Persistent divergence between groups of countries suggests increasing disparities in borrowers' demand and/or access to credit across euro area countries, reflecting differences in economic environment and outlook as well as potential disparities in the state of their banking systems and domestic sovereign risk.

**Description**

Annual percentage changes; adjusted for loan sales and securitisation from 2009 onwards.

**Chart 28 MFI loans to non-financial corporations**



Source: ECB.

Chart 29

**Standard deviation of banks' CDS premia by country group**

**Non-technical description**

The cross-country variance of CDS premia charged by investors for bank debt should provide a signal on financial integration. It must, however, be kept in mind that CDS prices also depend on a range of other factors, such as risk, liquidity, and the correlation between CDS premia for banks and sovereign CDS premia.

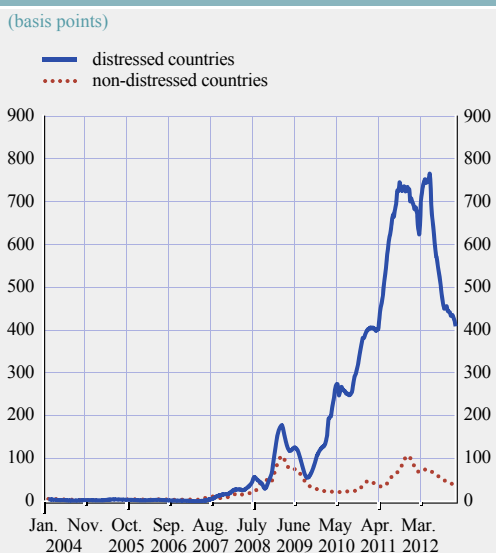
**Description**

For each group of countries, the indicator is the unweighted standard deviation of the average of banks' daily CDS premia in each euro area country.

**Additional information**

This indicator is based on CDS prices available for banks on the EONIA panel.

**Chart 29 Standard deviation of banks' CDS premia by country group**



Sources: Bloomberg, Thomson Reuters, Credit Market Analysis Ltd (CMA) and ECB calculations.  
 Note: Distressed countries: ES, GR, IE, IT, PT; non-distressed countries: AT, BE, DE, FR, NL.

**SURVEY-BASED INDICATOR**

Chart 30

**Changes in credit standards**

**Non-technical description**

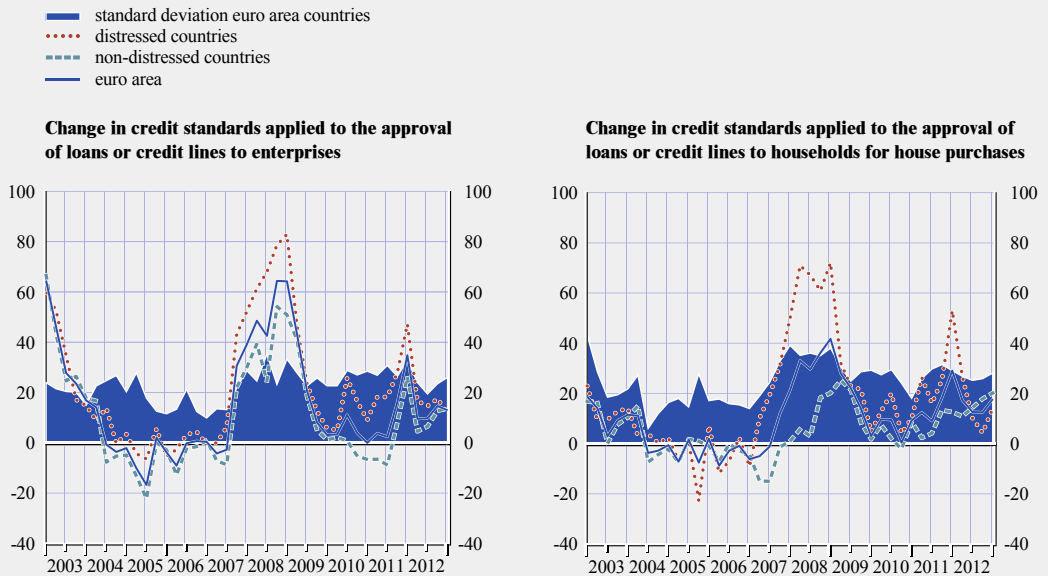
Persistent divergence in the level of credit standards between groups of countries suggests ongoing disparities in borrowers' access to credit across euro area countries.

**Description**

Changes in credit standards are given as net percentages of replies, i.e. percentage of banks indicating a tightening of credit standards minus percentage of banks indicating an easing of credit standards; country aggregate results are weighted by aggregate lending volumes.

**Chart 30 Changes in credit standards**

(net percentage of banks indicating a tightening of standards)



Sources: Eurosystem's bank lending survey (BLS) and ECB calculations.

**PRICE-BASED INDICATORS**

**Chart 31**

**Cross-country standard deviation of MFI interest rates on new loans to non-financial corporations**

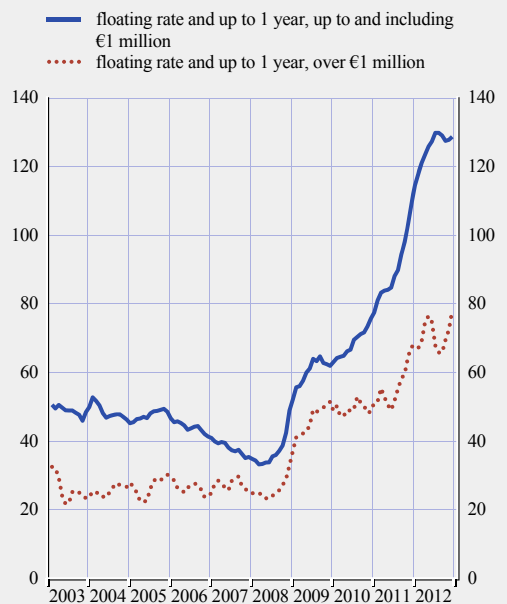
**Non-technical description**

The euro area cross-country dispersion of retail interest rates on loans and deposits from banks to non-financial corporations and households can be taken as an indicator of the degree of integration in the retail banking market. The dispersion of bank interest rates should be lower in the case of instruments that are more homogeneous across countries.

In this respect, it should be noted that differences in bank interest rates can be due to other factors, such as different conditions in national economies (credit and interest rate risk, firm size, industrial structure, degree of capital market development), institutional factors (taxation, regulation, supervision), and financial structures (degree of bank/capital market financing, competitiveness, etc.).

**Chart 31 Cross-country standard deviation of MFI interest rates on new loans to non-financial corporations**

(unweighted, basis points)



Source: ECB.



### Description

The following general notation is used for each of the above categories of loan:

$r_{c,t}$  = the interest rate prevailing in country  $c$  in month  $t$

$b_{c,t}$  = the business volume in country  $c$  in month  $t$

$w_{c,t} = \frac{b_{c,t}}{B_t}$  is the weight of country  $c$  in the total euro area business volume  $B$  in month  $t$  where

$$B_t = \sum_c b_{c,t}$$

MFI interest rates in the euro area are computed as the weighted average of country interest rates  $r_{c,t}$ , using the country weights  $w_{c,t}$ .

$$r_t = \sum_c w_{c,t} r_{c,t} \quad (12)$$

The euro area weighted standard deviation takes the following form:

$$M_t = \sqrt{\sum_c (r_{c,t} - r_t)^2 w_{c,t}} \quad (13)$$

The monthly data are smoothed by calculating a three-month centred moving average of the standard deviation.

### Additional information

The price measures for credit market integration are based on MIRs on new business reported to the ECB at monthly frequency since January 2003.

For the purpose of measuring financial integration, it might be preferable to compute the dispersion as the standard deviation of unweighted interest rates at the level of individual MFIs. However, these data are not available at the ECB, and therefore standard deviations of weighted rates across euro area countries are calculated instead.

### Chart 32

#### Cross-country standard deviation of MFI interest rates on loans to households

#### Non-technical description

See Chart 31 above.

#### Description

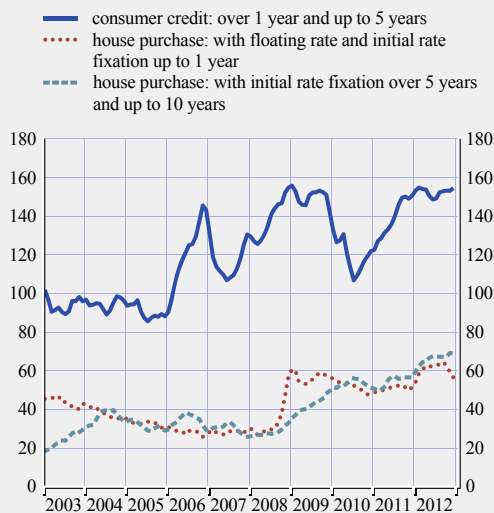
See Chart 31 above.

#### Additional information

See Chart 31 above.

**Chart 32 Cross-country standard deviation of MFI interest rates on loans to households**

(unweighted, basis points)



Source: ECB.

## OTHER INDICATOR

Chart 33

### Credit transfer and direct debit transactions processed in SEPA format in the euro area

#### Non-technical description

To address fragmentation in the euro retail payments market, a migration is under way from national credit transfers and direct debits to pan-European SEPA credit transfers (SCTs) and SEPA direct debits (SDDs), established as part of the SEPA project and complemented by interoperability arrangements between processing infrastructures. Migration to SEPA instruments facilitates the creation of an integrated euro retail payments market.

#### Description

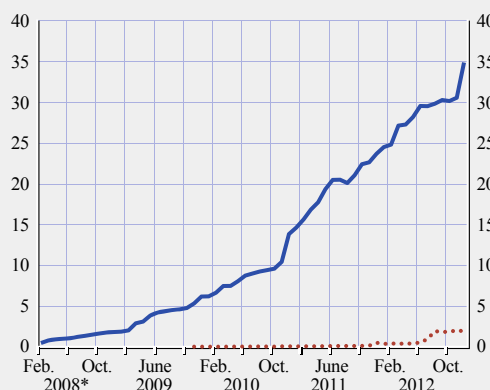
This indicator presents, on a monthly basis, the share of euro area SCT and SDD transactions as a percentage of the total volume of all euro area credit transfer and direct debit transactions (i.e. credit transfers and direct debits in old formats and SEPA formats combined) processed by clearing and settlement mechanisms (CSMs) located in the euro area. The indicator does not include “on-us” transactions (i.e. transactions between accounts at the same bank) or transactions cleared between banks bilaterally or via correspondent banking. Nevertheless, focusing on the transactions processed by CSMs provides a good approximation of SCT and SDD usage.

The higher the value of the indicator, the higher is the usage of the SEPA format. A value of 100% would indicate that only SEPA formats are used and have fully replaced the non-SEPA instruments (i.e. SEPA has been fully implemented with regard to credit transfers and direct debits) in the “bank-to-bank” domain, as measured by the CSM data.

Chart 33 Credit transfer and direct debit transactions processed in SEPA format in the euro area

(percentages of total transactions)

— credit transfer transactions processed in SEPA format (percentage of total credit transfer transactions)  
..... direct debit transactions processed in SEPA format (percentage of total direct debit transactions)



Source: ECB.  
\* 28 Jan 2008 - 29 Feb 2008

DEVELOPMENT INDICATORS

Chart 34

Size of capital markets

Description

This indicator is calculated as the sum of (i) stock market capitalisation, (ii) bank credit to the private sector and (iii) debt securities issued by the private sector, divided by GDP for each year. Then the five-year averages (for the last period, the seven year average) of the annual ratios are calculated.

Figures for the euro area (EA)<sup>3</sup> and Euronext countries (EX)<sup>4</sup> are averages of country data weighted by GDP.

Stock market capitalisation: figures for Japan refer to the Tokyo Stock Exchange. Figures for the United States include the AMEX, the NYSE and the NASDAQ. Euro area stock market capitalisation is the sum of the values for Euronext and for euro area countries not included in Euronext. Stock market capitalisation includes only shares issued by domestic companies; it does not include shares issued by foreign companies.

Debt securities issued by the private sector: for euro area countries, data are from the Securities and Exchange Commission (SEC) database.

Data for Greece, Ireland and Luxembourg start in 1993. For Ireland, BIS data are used for the years 1993 to 2002 for MFIs and for the years 1993 to 2007 for other issuers. For Luxembourg, BIS data for the years 1993 to 2007 are used for non-MFI issuers. For non-euro area countries, BIS data are used (sum of international and domestic amounts outstanding of bonds issued by corporate issuers and financial institutions).

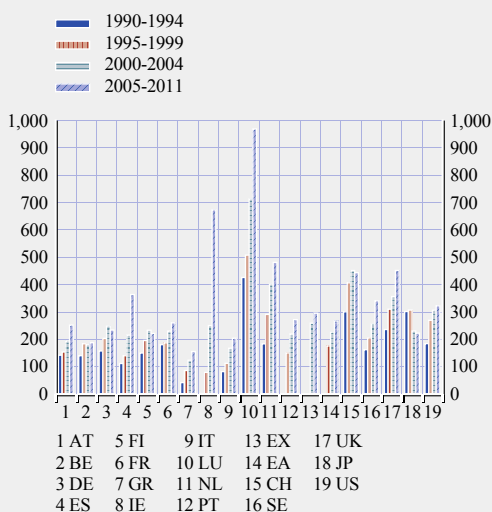
Bank credit to the private sector: euro area figures are the sum of euro area country figures and include cross-border loans between euro area countries.

Description

This indicator shows the outstanding amounts of debt securities issued by non-financial corporations, as a percentage of GDP for each year. Then the five-year averages (for the last period, the seven year average) of the annual ratios are calculated.

Chart 34 Size of capital markets

(aggregate volume of shares, bonds and loans to the private sector as a percentage of GDP)



Sources: WFE, BIS, IMF, ECB, Thomson Reuters, Eurostat and ECB calculations.

3 In the fixed composition of the 12 euro area countries: AT, BE, DE, ES, FI, FR, GR, IE, IT, LU, NL, PT.  
 4 The Euronext countries are BE, FR, NL and PT.

Chart 35

**Debt securities issued by non-financial corporations**

Data for the euro area countries come from the SEC database. For Ireland and Luxembourg, BIS data are used. Data for Greece, Ireland and Luxembourg start in 1993. For non-euro area countries, BIS data are used (the sum of international and domestic amounts outstanding of bonds issued by corporate issuers).

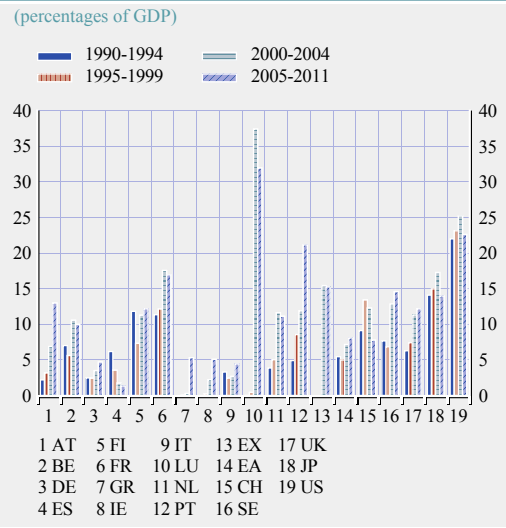
Chart 36-37

**Description**

Independent private equity investment is provided by private equity firms that are not themselves owned by another financial institution. The data cover investments made by companies in each country. No data are available for Luxembourg, Malta, Slovenia or Japan.

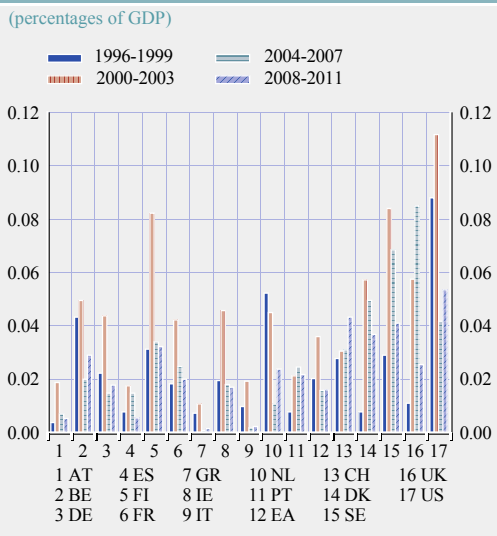
Data for Greece are not available for 1993 and 1994. Euro area figures are averages of country data weighted by GDP.

**Chart 35 Debt securities issued by non-financial corporations**



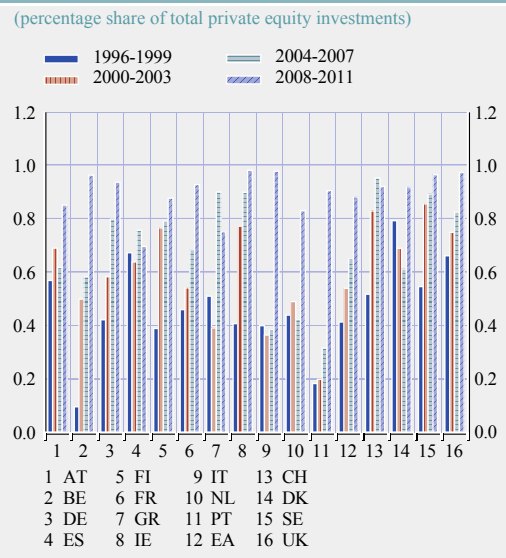
Sources: BIS, ECB, Eurostat, IMF and ECB calculations.

**Chart 36 Venture capital finance**



Sources: European Private Equity and Venture Capital Association, PricewaterhouseCoopers, Eurostat and ECB calculations.

**Chart 37 Private equity investments by independent funds**



Sources: European Private Equity and Venture Capital Association and ECB calculations.

Chart 38

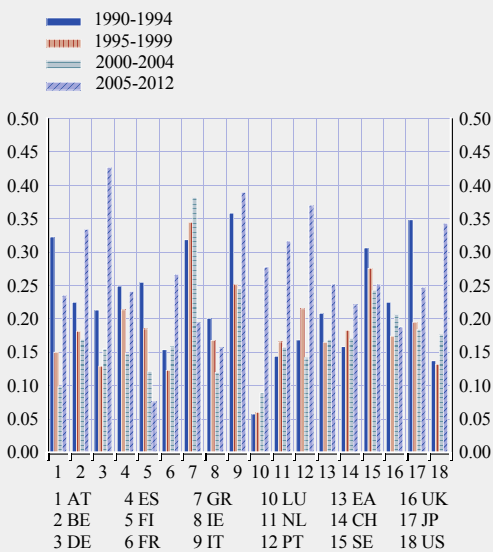
**Pricing of global and regional information in the stock market**

**Description**

Average  $R^2$  statistics for each country are obtained by regressing firms' stock returns on market factors, i.e. the returns on domestic, euro area, US and emerging countries' stock market indices. Typically, low indicator values suggest that the stock returns contain more firm-specific information. Euro area figures are averages of country  $R^2$  statistics weighted by stock market capitalisation.

**Chart 38 Pricing of global and regional information in the stock market**

( $R^2$  statistics)



Sources: Thomson Reuters and ECB calculations.

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